# TR3-50

# SERVICE MANUAL




**Manufactured by PGO**
**of Motive Power Industry Co., Ltd**

# PREFACE

This manual provides every service specialist with professional techniques of maintenance and repairing for Tricycle T-REX 50. It provides a
detailed guide for those who may concern with how to maintain, repair, reassemble, and change parts of their scooters.

At every section, we illstrate each important point by assembling procedures, explosive diagrams and photographs.

Although we have tried our best to make this manual as perfect as possible, please kindly inform us if any fault needs to be corrected in this manual.

Thank you for purchasing our PGO scooters.

Motive Power Industry Co., Ltd.
Service Department
October 20, 2004

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# SPECIFICATIONS

| Model | **TR3-50** | Transmission | |
|---|---|---|---|
| Overall Length | 1930mm | Primary reduction | Direct |
| Overall width | 880mm | Secondary ratio | 52/13*44/13 |
| Overall height | 1145mm | | 110CC |
| Seat height | 770mm | Reverse | Drive/Reverse |
| Wheelbase | 1385mm | differential | **250CC** |
| Dry weight | 133kgs | Frame | Steel pipe |
| Engine Model | P2 | Front fork | Telescopic |
| Piston displacement | 49CC | Rear cushion | Uni-absorber |
| Bore | 40.0mm | Front tire | 120/70-12*1 |
| Stroke | 39.2mm | Rear tire | 130/70-12*2 |
| Compression ratio | 6.8:1 | Fuel | Unleaded gas |
| Ignition | CDI | Capacity | 6.7L |
| Clutch | Centrifugal / CVT | Front brake | Hydraulic disk brake |
| Shifting | Drive / Reverse | Rear brake | Durm brake |
| Lubricant | Auto seperated | Head light | 12V-18W*2 |
| Steering angel | 、 | Tail light | 12V-10W/3W |
| Left | 41 | Signal light | 12V-10W*4 |
| Right | 41 | Silencer | Diffusible absorption |

## Ⅱ.Service information：

(1)The operation notice
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10. Fuel indicafor malfunction
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## (1)**The operation notice：**

1.For parts like the gasket, o-ring, clips and circlets, please change a new part whenever re-assembled.

2.When trying to tighten screws or nuts, please lock tightly according to each recommended locking torque and in the sequence of the”X” pattern.

3.Please use PGO or PGO recommended parts.

4.After dismantling, please clean all parts involved or used for checking and grease all contact surfaces when reassembling.

5.Use grease recommended by P.G.O.

6.When removing the battery, please disconnect the negative pole(-) first. However, please connect the positive pole(+) first when assembling.

7.Before installing a new fuse, please be sure that the specification is correct.

8.After reassembling, please re-confirm that all connecting point, locking parts, circuits, polar characteristics are functioning well befor selling out.

**Operation Notice：**

**1.Turn the shifting bar to right side to drive backward.**

**2.Turn the shifting bar to left side to drive forward.**

**CAUTION：Don’t shift the gear until the vehicle is stopped.**

**When shifting to “R”, you have to brake the vehicle simultaneously, otherwise the engine will stop automatically for your safety.**

**3.Use the brake-lock device in the LH switch comp when stopping in inclined road.**

## (2) **Locking Torque Value:**

1.Engine

| No | Locking location | **Thread** Dia (mm) | Locking torque kg-m | **Remarks** |
|---|---|---|---|---|
| 1 | Cylinder head | 7 | 1.0~1.4 | When the engine is cold |
| 2 | Flywheel outer | 10 | 3.2~4.0 | |
| 3 | Rear brake lever | 6 | 1.0~1.2 | |
| 4 | Driving pulley | 10 | 3.2~4.0 | |
| 5 | Clutch outer | 10 | 3.5~4.0 | |
| 6 | Right crankcase | 6 | 1.0~1.2 | |
| 7 | Drive gear box cover | 6 | 1.0~1.2 | |
| 8 | Left crankcase | 6 | 1.0~1.2 | |
| 9 | Draining and filler bolt | 8 | 1.8 | When the engine is cold |
| 10 | Inlet pipe | 6 | 1.0~1.2 | |
| 11 | Flywheel magneto stator | 6 | 1.0~1.2 | |
| 12 | Cooling fan | 6 | 1.0~1.2 | |
| 13 | Muffler nut on cylinder head | 6 | 1.0~1.2 | When the engine is cold |
| 14 | Starting motor | 6 | 1.0~1.4 | When the engine is cold |
| 15 | Bracket between eng. and Rubber pad of central stand | 6 | 1.0~1.2 | |
| 16 | Spark plug | 14 | 2.5~3.0 | |
| 17 | Fan cover | 6 | 1.0~1.2 | |
| 18 | Fixed plate, drive clutch | 6 | 1.0~1.4 | |
| 19 | Nut of rear wheel axle | 14 | 11~13 | U TYPE NUT |
| 20 | Kick starter | 6 | 1.0~1.2 | |

2. chassis

| | | | | |
|---|---|---|---|---|
| 1 | Steering stem nut | 10mm | 3.0~4.0 | Lock nut |
| 2 | Front axle nut | 12mm | 5.0~6.0 | (U type nut) |
| 3 | Fixed nut fasten eng. and chassis | 12mm | 5.0~6.0 | (U type nut) |
| 4 | Rear shock absorber(upper)<br>Rear shock absorber(lower) | 10mm<br>8mm | 3.0~4.0<br>2.0~3.0 | |
| 5 | Lock nut faster frt. brake disk and frt. wheel rim | 8mm | 2.0~3.0 | Lock nut |
| 6 | Lock bolt between frt. brake pump and frt. absorber | 8mm | 2.0~3.0 | Lock |

3.Other parts standard torque values:

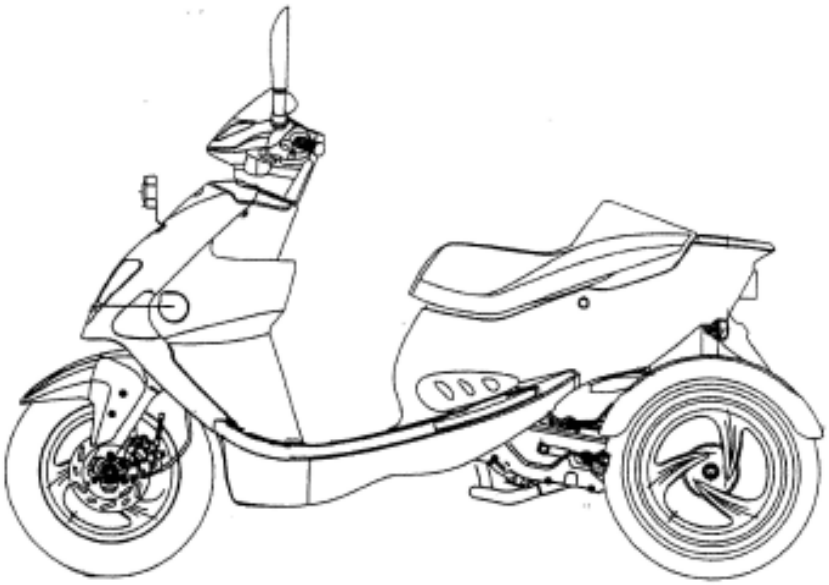
| No | Item | Torque kg-m |
|---|---|---|
| 1 | 5mm bolt and nut | 0.45-0.6 |
| 2 | 6mm bolt and nut | 0.8-1.2 |
| 3 | 8mm bolt and nut | 1.8-2.5 |
| 4 | 10mm bolt and nut | 3.0-4.0 |
| 5 | 12mm bolt and nut | 5.0-6.0 |
| 6 | 5mm screw | 0.35-0.5 |
| 7 | 6mm screw | 0.7-1.4 |
| 8 | 6mm flange bolt and screw | 1.0-1.4 |
| 9 | 7mm flange bolt and screw | 1.0-1.4 |
| 10 | 8mm flange bolt and screw | 2.0-3.0 |
| 11 | 10mm flange bolt and screw | 3.0-4.0 |

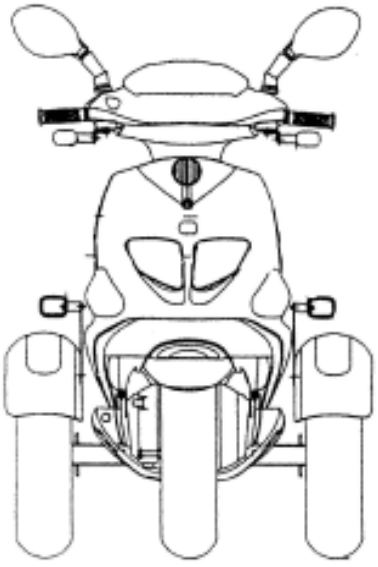
**(3)Lubrication instruction**

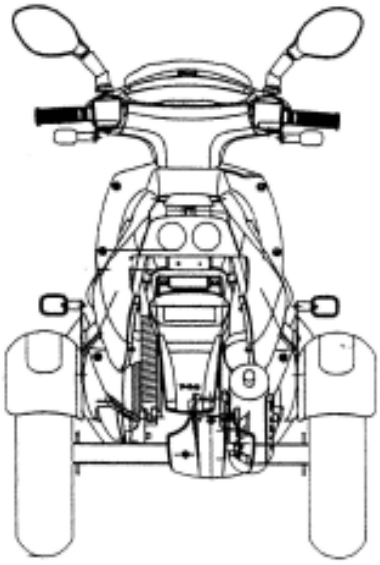
**A. Engine**

| NO | Lubrication location | Oil type | Remarks |
|---|---|---|---|
| 1 | Crankcase:rotating part, Sliding part | Premium 2 stroke Motorcycle oil Or SAE#30 | Auto-se[arated Lubrication |
| 2 | Cylinder:rotating part, Sliding part. | | |
| 3 | Drive gear box | SAE85-140 | Total 110 c.c. Replacement 90c.c |
| | Reverse gear box | SAE85-140 | Total 250 c.c. Replacement 220c.c |
| 4 | Gasket of starter shaft | Clean grease | (#3) |
| 5 | Start idle gear sliding parts | Clean grease | (#3) |

B. Chassis appearance



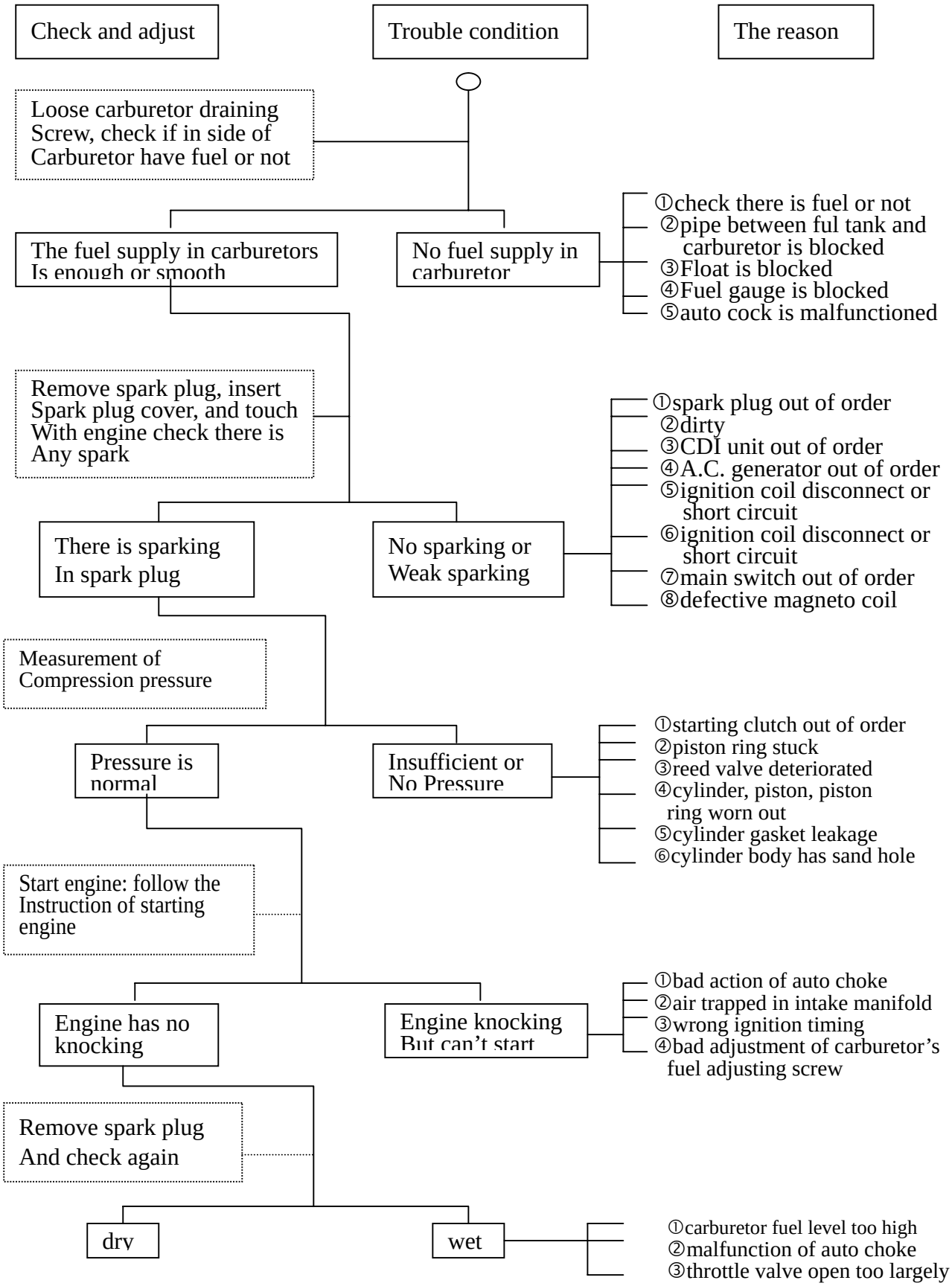




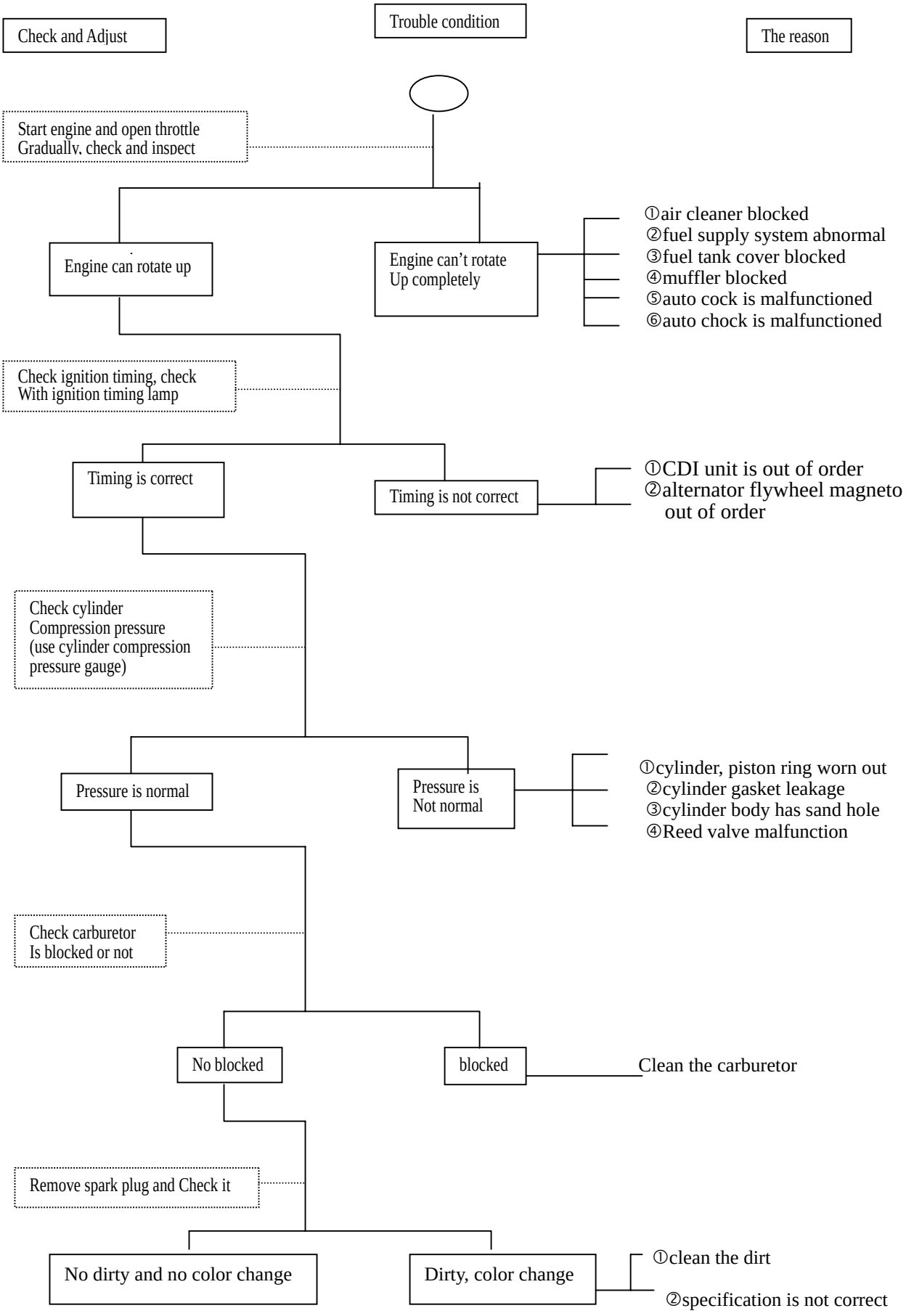
C.Wheel bearing

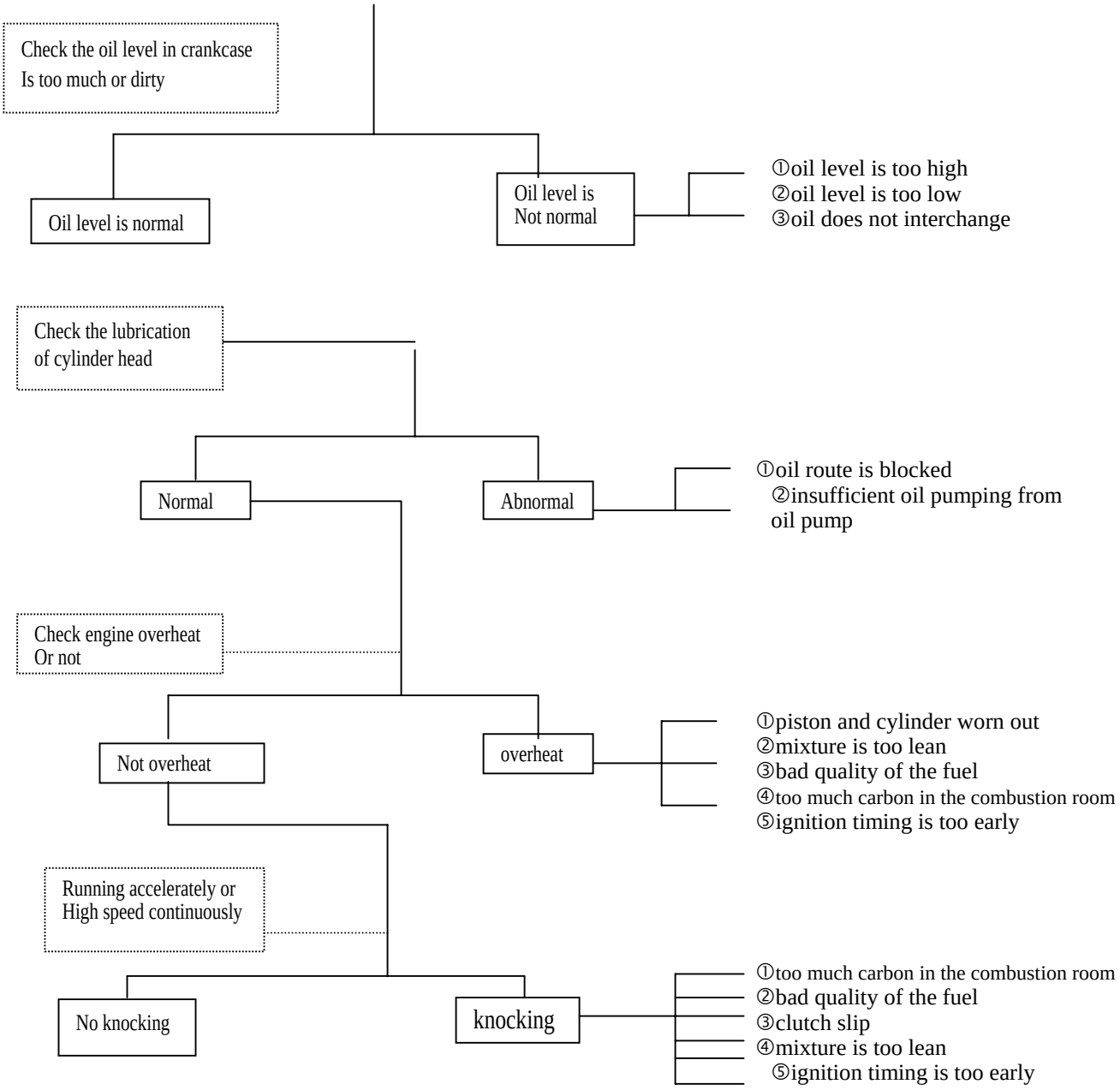
## (5)Trouble shooting:

1.difficult starting or can't start:

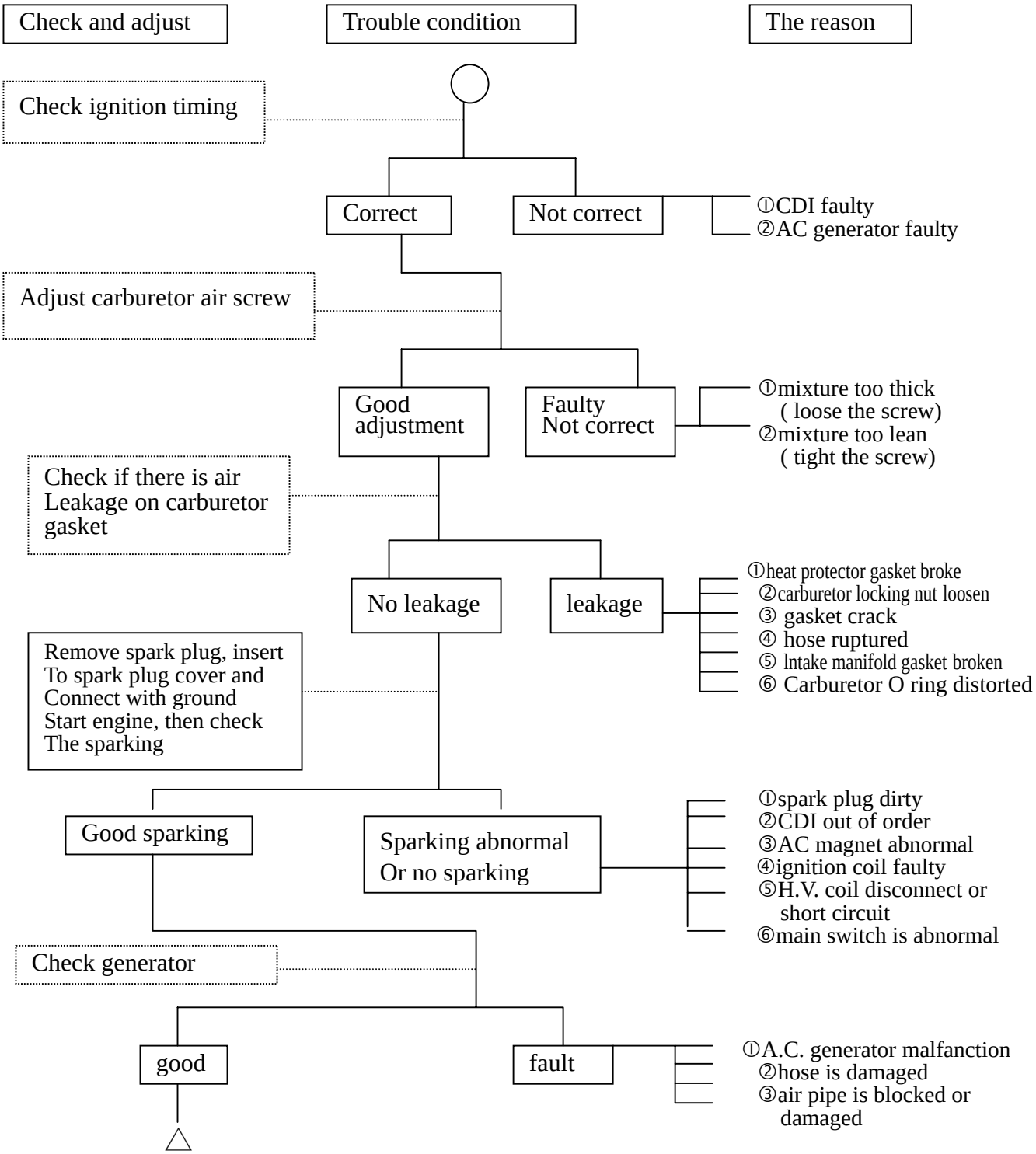

Check and adjust
Trouble condition
The reason
Loose carburetor draining Screw, check if in side of Carburetor have fuel or not
The fuel supply in carburetors Is enough or smooth
No fuel supply in carburetor
①check there is fuel or not
②pipe between ful tank and carburetor is blocked
③Float is blocked
④Fuel gauge is blocked
⑤auto cock is malfunctioned
Remove spark plug, insert Spark plug cover, and touch With engine check there is Any spark
There is sparking In spark plug
No sparking or Weak sparking
①spark plug out of order
②dirty
③CDI unit out of order
④A.C. generator out of order
⑤ignition coil disconnect or short circuit
⑥ignition coil disconnect or short circuit
⑦main switch out of order
⑧defective magneto coil
Measurement of Compression pressure
Pressure is normal
Insufficient or No Pressure
①starting clutch out of order
②piston ring stuck
③reed valve deteriorated
④cylinder, piston, piston ring worn out
⑤cylinder gasket leakage
⑥cylinder body has sand hole
Start engine: follow the Instruction of starting engine
Engine has no knocking
Engine knocking But can't start
①bad action of auto choke
②air trapped in intake manifold
③wrong ignition timing
④bad adjustment of carburetor's fuel adjusting screw
Remove spark plug And check again
dry
wet
①carburetor fuel level too high
②malfunction of auto choke
③throttle valve open too largely

2.Weak acceleration:

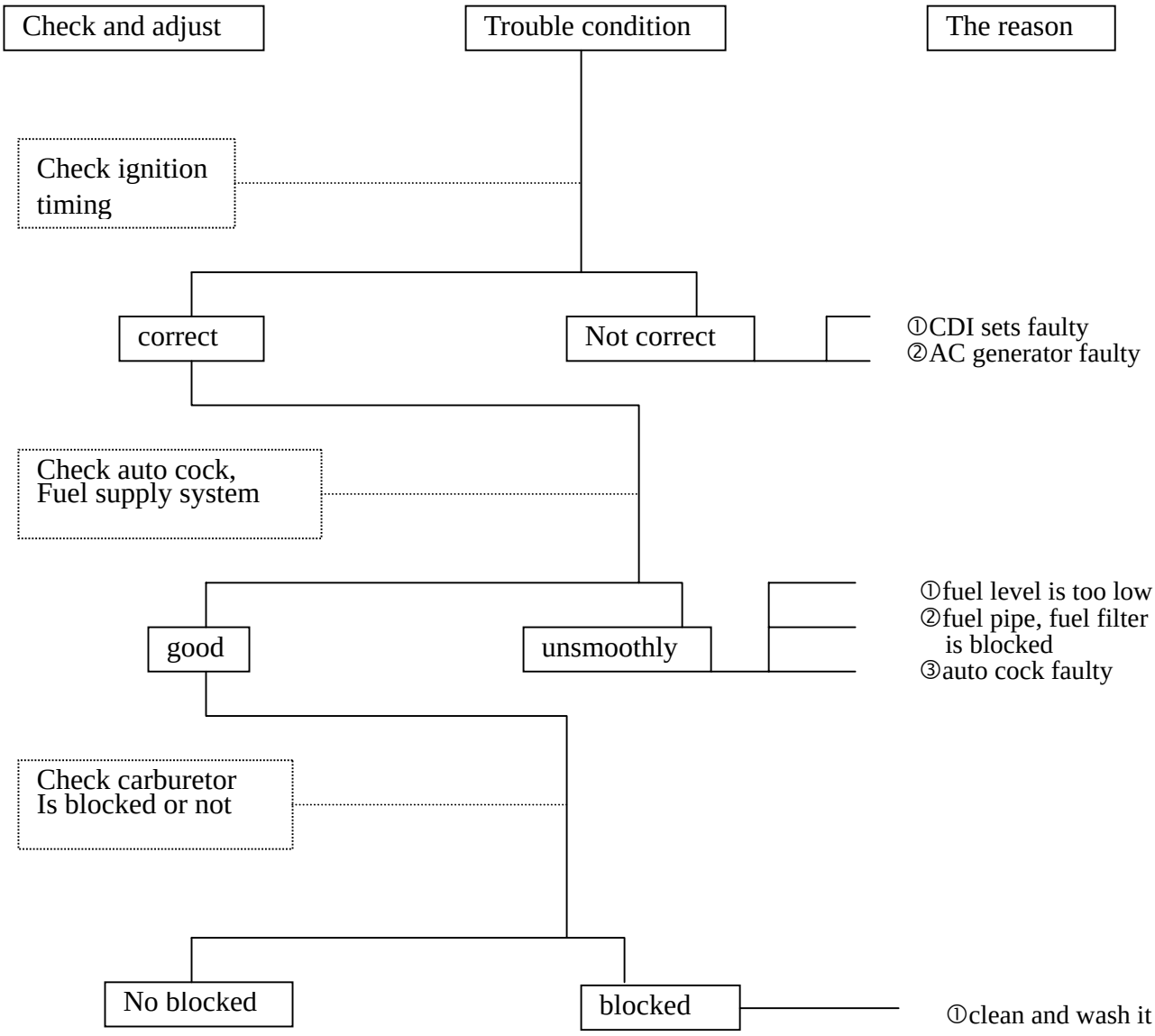



Check the oil level in crankcase
Is too much or dirty
Oil level is normal
Oil level is
Not normal
①oil level is too high
②oil level is too low
③oil does not interchange
Check the lubrication
of cylinder head
Normal
Abnormal
①oil route is blocked
②insufficient oil pumping from
oil pump
Check engine overheat
Or not
Not overheat
overheat
①piston and cylinder worn out
②mixture is too lean
③bad quality of the fuel
④too much carbon in the combustion room
⑤ignition timing is too early
Running accelerately or
High speed continuously
No knocking
knocking
①too much carbon in the combustion room
②bad quality of the fuel
③clutch slip
④mixture is too lean
⑤ignition timing is too early

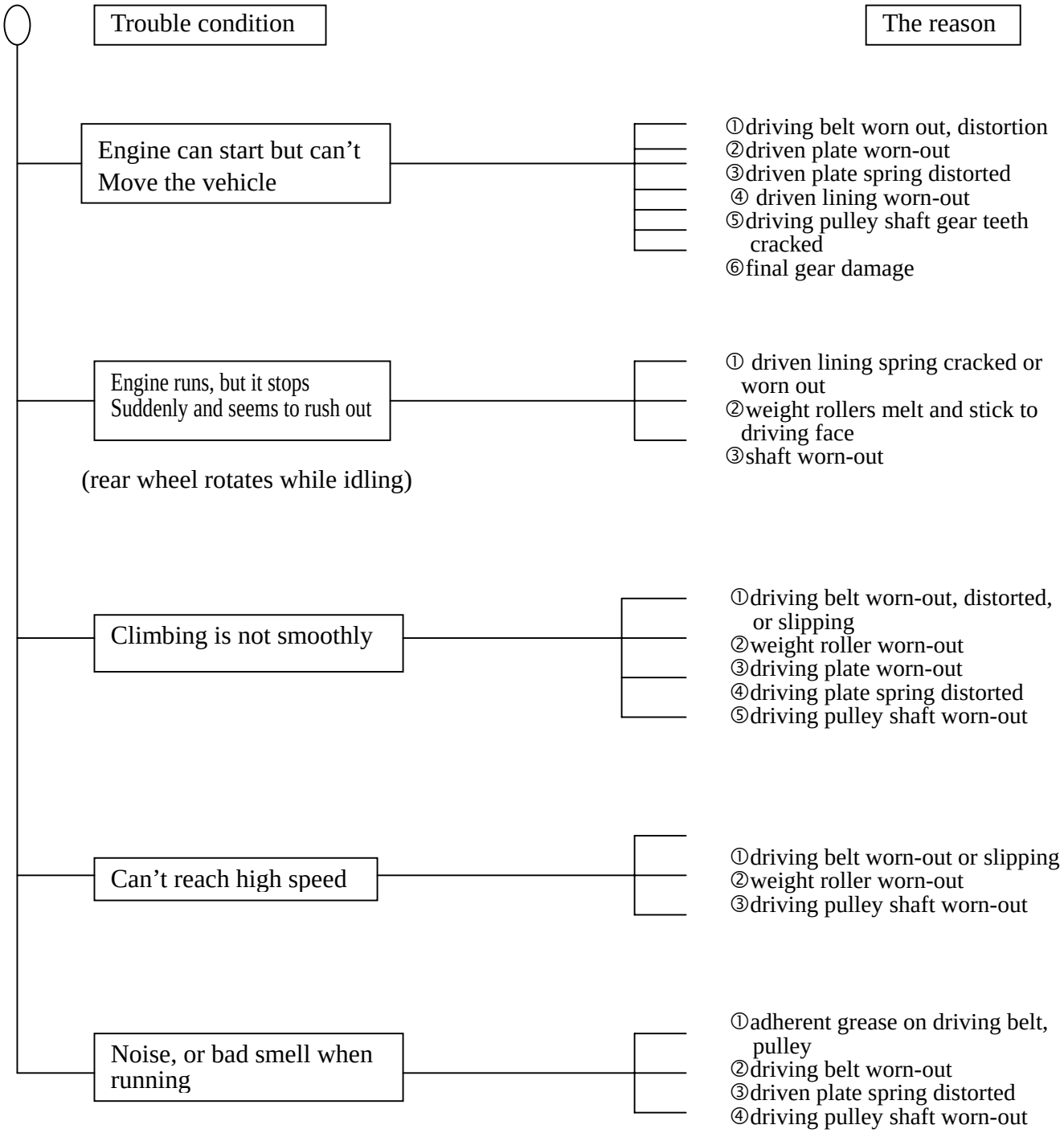
## 3.Engine running unsmoothly (low speed and idling)



## 4.Engine running unsmoothly (high speed)



## 5.Clutch, drive and driven pulley


Trouble condition
The reason
Engine can start but can't Move the vehicle
①driving belt worn out, distortion
②driven plate worn-out
③driven plate spring distorted
④ driven lining worn-out
⑤driving pulley shaft gear teeth cracked
⑥final gear damage
Engine runs, but it stops Suddenly and seems to rush out
(rear wheel rotates while idling)
① driven lining spring cracked or worn out
②weight rollers melt and stick to driving face
③shaft worn-out
Climbing is not smoothly
①driving belt worn-out, distorted, or slipping
②weight roller worn-out
③driving plate worn-out
④driving plate spring distorted
⑤driving pulley shaft worn-out
Can't reach high speed
①driving belt worn-out or slipping
②weight roller worn-out
③driving pulley shaft worn-out
Noise, or bad smell when running
①adherent grease on driving belt, pulley
②driving belt worn-out
③driven plate spring distorted
④driving pulley shaft worn-out

## 6.Handlebar steering astrayed when running.

| Trouble condition | The reason |
|---|---|
| | (front and rear wheel pressure are normal) |
| Handlebar operates heavily | ①steering column lock screw locked too tightly<br>②steel ball cracked |
| Front and rear wheel swings | ①rear, front wheel bearing swings<br>②front, rear wheel rim distorted<br>③ollse front axle nut |
| Handlebar astrayed to one direction | ①front and rear wheel center not well-digned<br>②front fork crooked |

## 7.Front, rear damper not in balanced

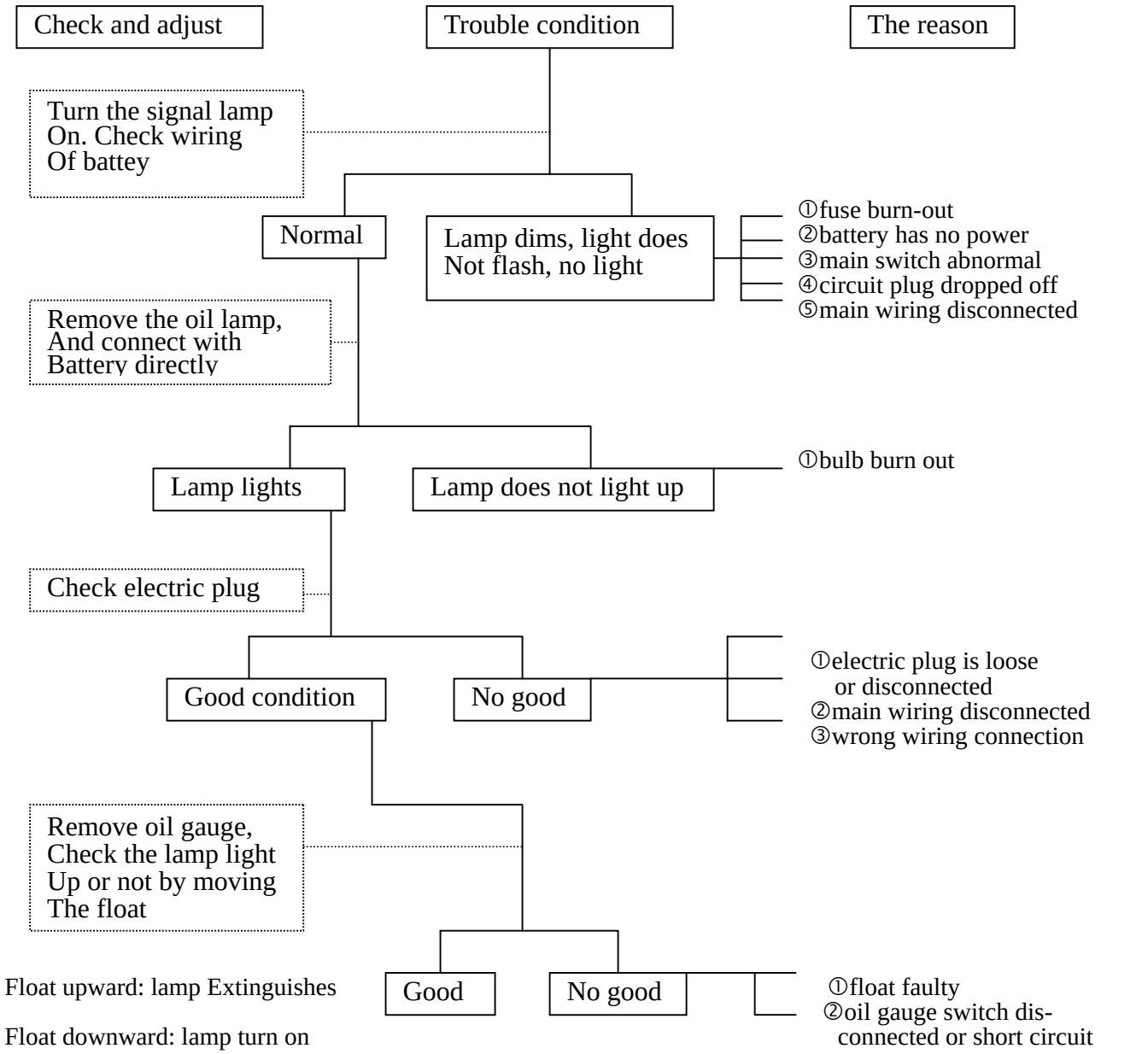
| Trouble condition | The reason |
|---|---|
| | (front and rear wheel pressure is normal) |
| Damper is too soft | ①damper spring is too soft<br>②carrying weight is too large<br>③damper oil leakage |
| Damper is too hard | ①front fork guide rod crooked<br>②damper and damper cover cracked |
| Damper has abnormal noise | ①problems in damper tube and spring<br>②damper and damper cover cracked |

## 8.Brake disorder.

| Trouble condition | The reason |
|---|---|
| | (adjustment according to standard procedure) |
| Brake plate"△"mark points to "△"mark | ①brake lining worn-out<br>②bake lining cam worn-out<br>③brake cam worn-out<br>④brake hub worn-out |
| Noise when brake | ①brake lining worn-out<br>②unknow matenals attached on brake lining<br>③Contact surface of the wheel hub becomes rough |
| Faulty performance | ①brake cable over stretching or moving unsmoothly<br>②brake contacting surface wi6h brake lining does not comtact 100%<br>③water or sand drop into brake mechanism<br>④some grease on brake lining surface |

9.Oil indicator malfunction

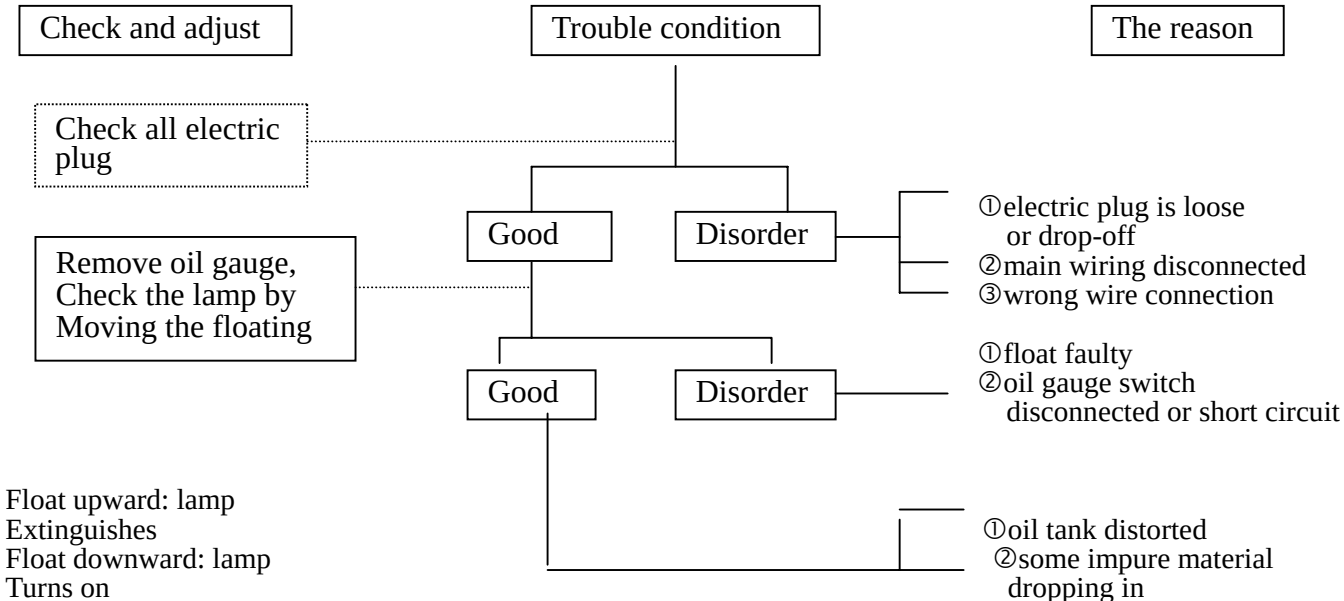
(a)The oil lamp doesn't light up, (when the main switch is at "ON"position)


Check and adjust
Trouble condition
The reason
Turn the signal lamp On. Check wiring Of battey
Normal
Lamp dims, light does Not flash, no light
①fuse burn-out
②battery has no power
③main switch abnormal
④circuit plug dropped off
⑤main wiring disconnected
Remove the oil lamp, And connect with Battery directly
Lamp lights
Lamp does not light up
①bulb burn out
Check electric plug
Good condition
No good
①electric plug is loose or disconnected
②main wiring disconnected
③wrong wiring connection
Remove oil gauge, Check the lamp light Up or not by moving The float
Good
No good
①float faulty
②oil gauge switch dis-connected or short circuit

Float upward: lamp Extinguishes

Float downward: lamp turn on

(b)Oil is enough but the indicator turns on all the time (when the main switch is "ON")

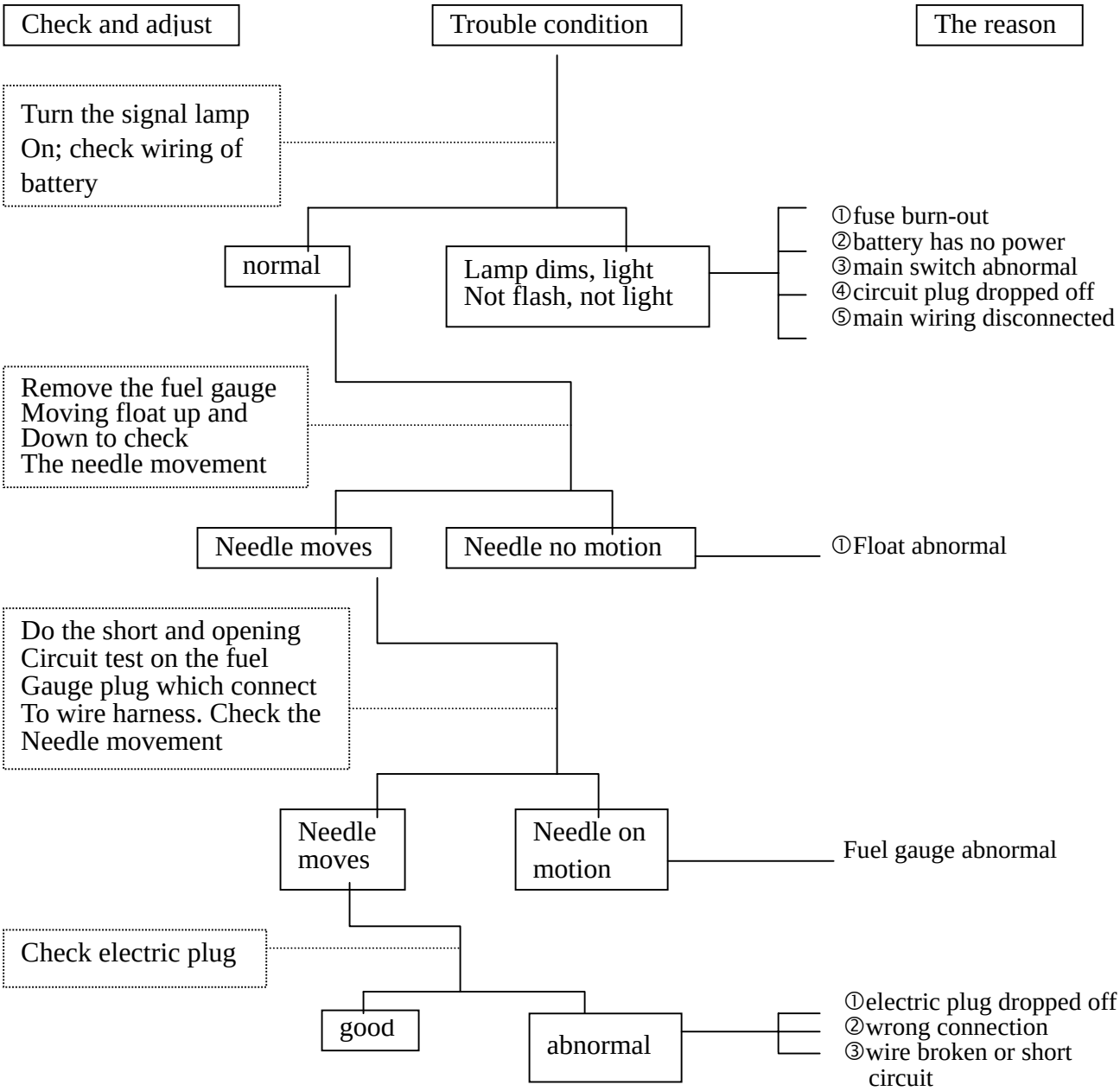



Float upward: lamp Extinguishes

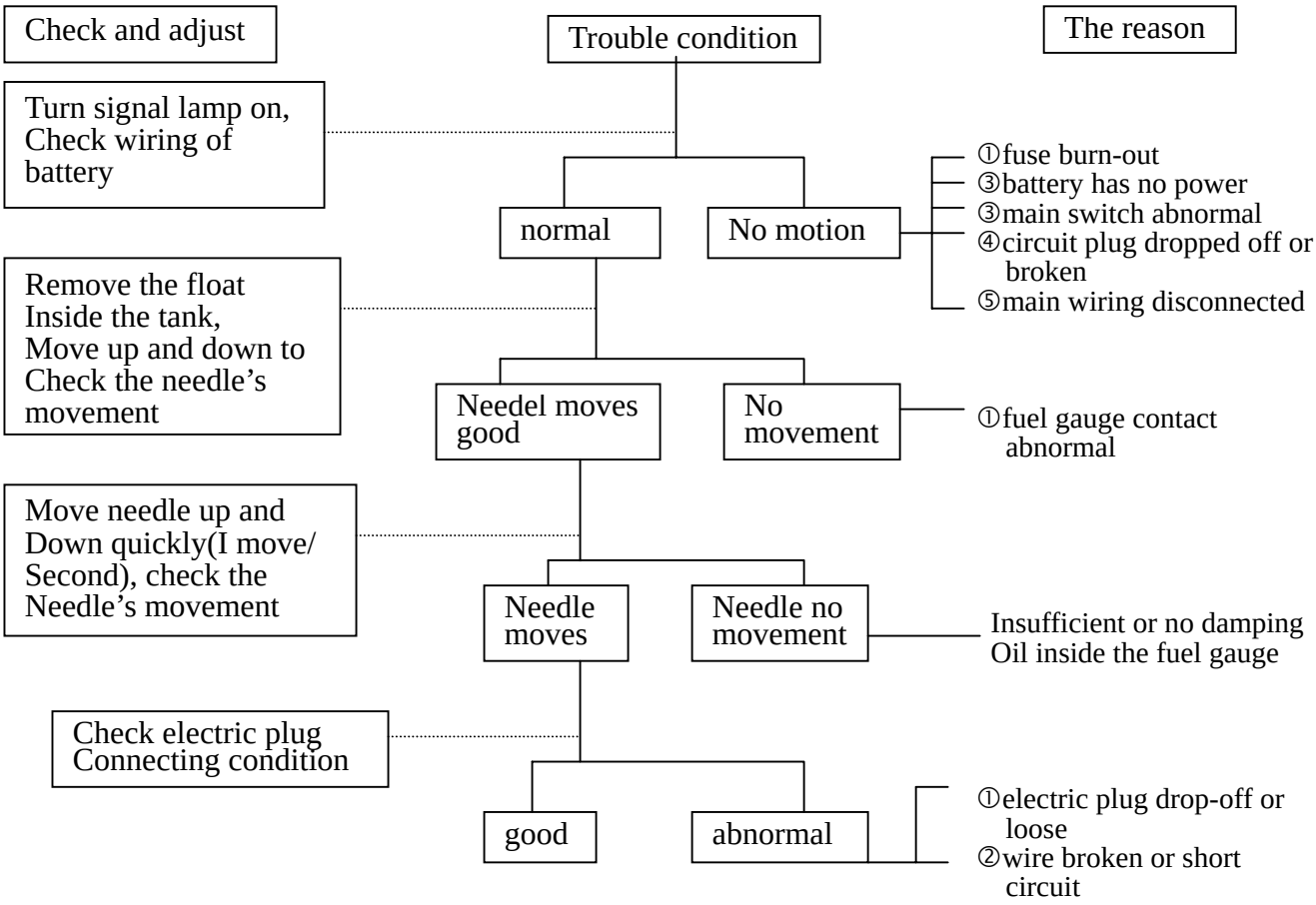
Float downward: lamp Turns on

10.Fuel indication malfunction

(a)wrong fuel level indication(when the main switch is “ON”)

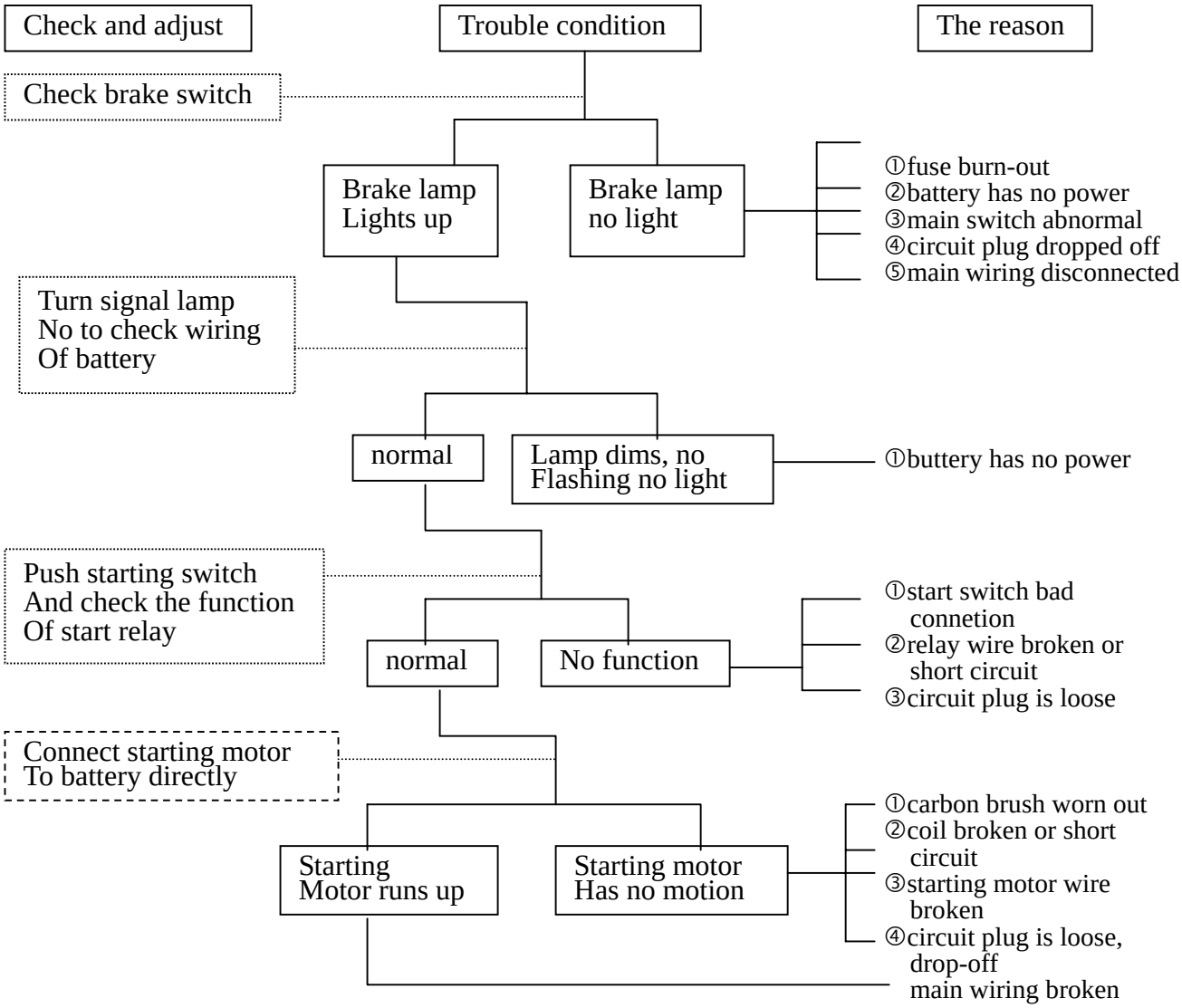

Check and adjust
Trouble condition
The reason
Turn the signal lamp On; check wiring of battery
normal
Lamp dims, light Not flash, not light
①fuse burn-out
②battery has no power
③main switch abnormal
④circuit plug dropped off
⑤main wiring disconnected
Remove the fuel gauge Moving float up and Down to check The needle movement
Needle moves
Needle no motion
①Float abnormal
Do the short and opening Circuit test on the fuel Gauge plug which connect To wire harness. Check the Needle movement
Needle moves
Needle on motion
Fuel gauge abnormal
Check electric plug
good
abnormal
①electric plug dropped off
②wrong connection
③wire broken or short circuit

(b)Fuel gauge needle is not steady and sometimes moves up and down (when the main switch is “ON”)

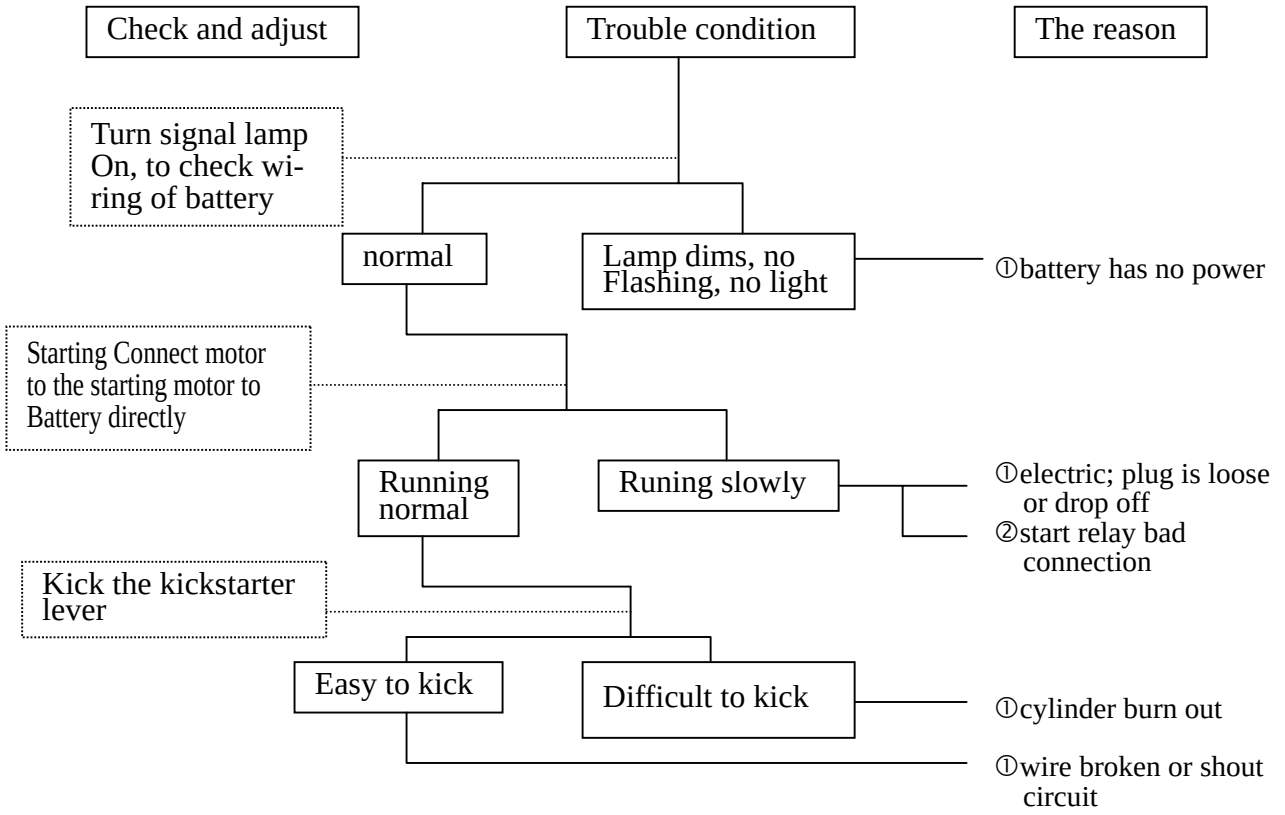

Check and adjust
Trouble condition
The reason
Turn signal lamp on, Check wiring of battery
normal
No motion
①fuse burn-out
③battery has no power
③main switch abnormal
④circuit plug dropped off or broken
⑤main wiring disconnected
Remove the float Inside the tank, Move up and down to Check the needle’s movement
Needel moves good
No movement
①fuel gauge contact abnormal
Move needle up and Down quickly(I move/ Second), check the Needle’s movement
Needle moves
Needle no movement
Insufficient or no damping Oil inside the fuel gauge
Check electric plug Connecting condition
good
abnormal
①electric plug drop-off or loose
②wire broken or short circuit

## 11.The starting motor abnormal

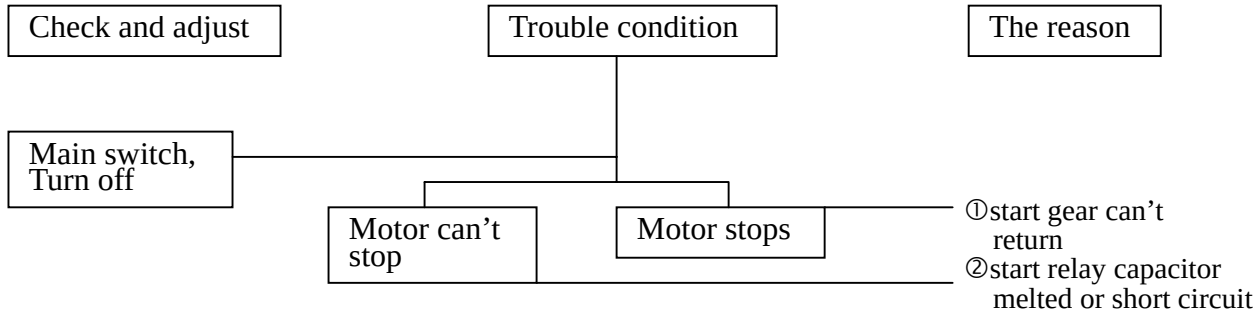
(a)Starting motor can not rotate



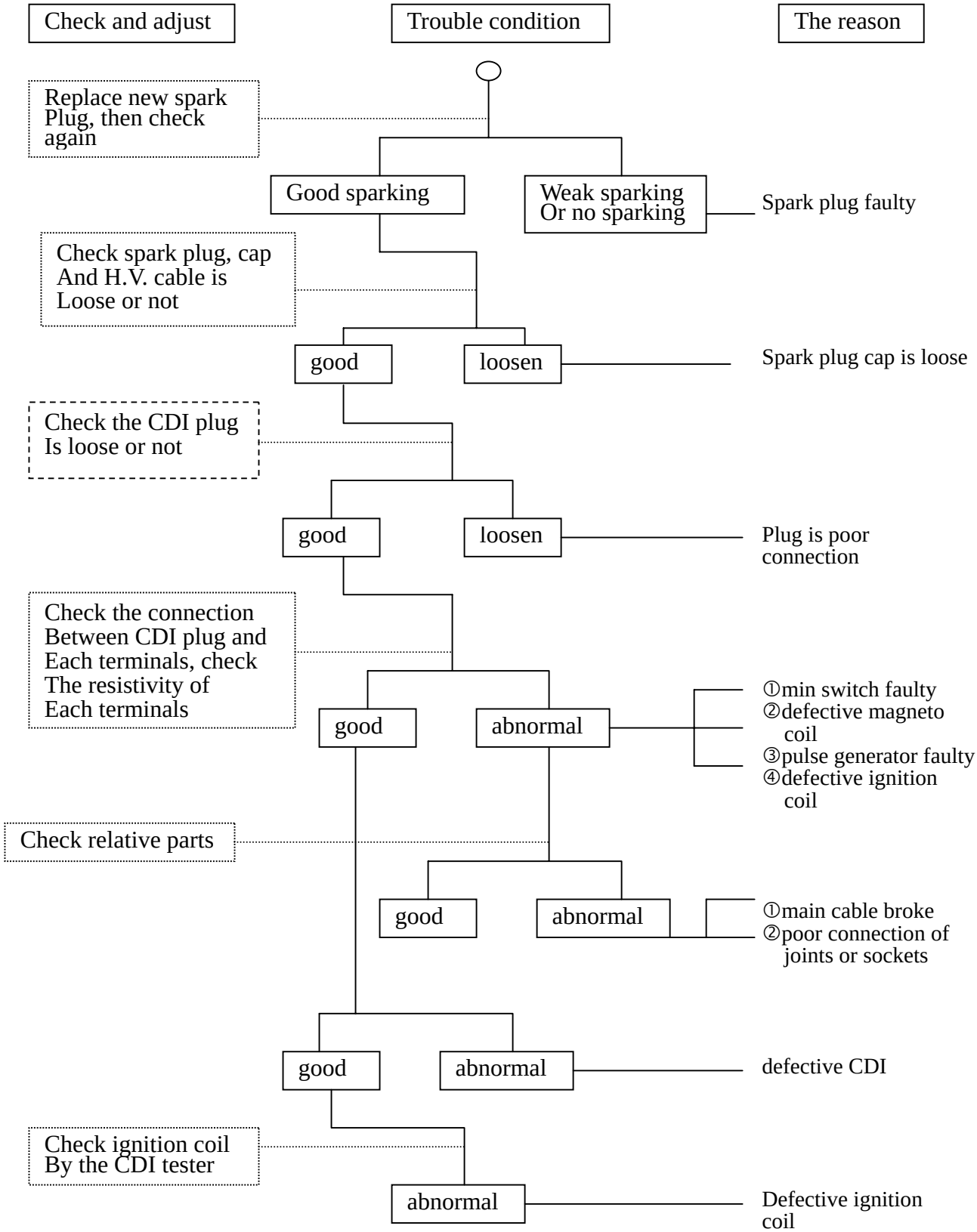
(b)Starting motor running slowly or no pick-up


Check and adjust
Trouble condition
The reason
Turn signal lamp On, to check wi-ring of battery
normal
Lamp dims, no Flashing, no light
①battery has no power
Starting Connect motor to the starting motor to Battery directly
Running normal
Runing slowly
①electric; plug is loose or drop off
②start relay bad connection
Kick the kickstarter lever
Easy to kick
Difficult to kick
①cylinder burn out
①wire broken or shout circuit

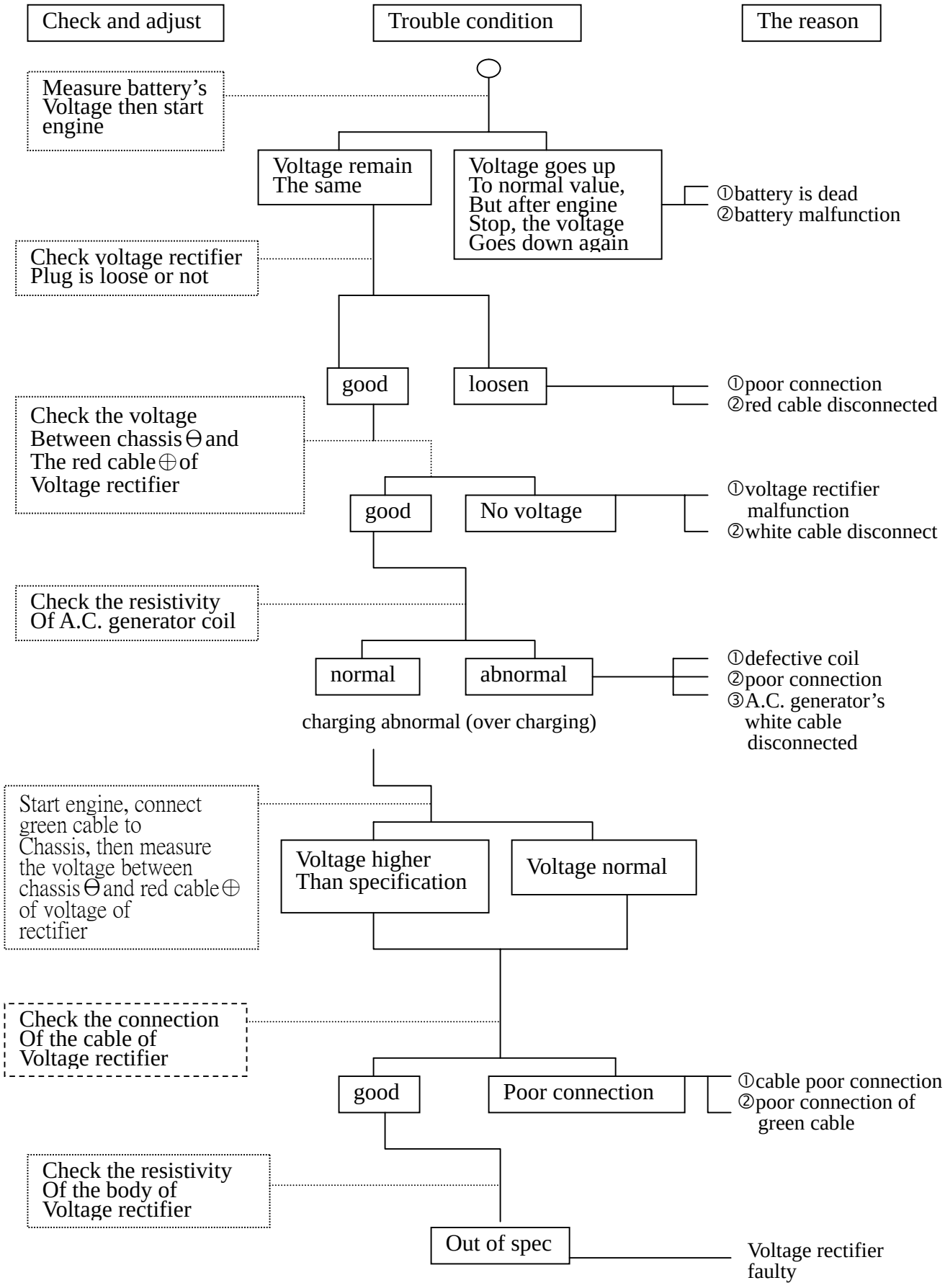
©Starting motor can not stop after starting



## 12.No sparking



## 13.Charging abnormal(battery over charging or over discharging)


Check and adjust
Trouble condition
The reason
Measure battery's Voltage then start engine
Voltage remain The same
Voltage goes up To normal value, But after engine Stop, the voltage Goes down again
①battery is dead
②battery malfunction
Check voltage rectifier Plug is loose or not
good
loosen
①poor connection
②red cable disconnected
Check the voltage Between chassis ⊖ and The red cable ⊕ of Voltage rectifier
good
No voltage
①voltage rectifier malfunction
②white cable disconnect
Check the resistivity Of A.C. generator coil
normal
abnormal
①defective coil
②poor connection
③A.C. generator's white cable disconnected
charging abnormal (over charging)
Start engine, connect green cable to Chassis, then measure the voltage between chassis ⊖ and red cable ⊕ of voltage of rectifier
Voltage higher Than specification
Voltage normal
Check the connection Of the cable of Voltage rectifier
good
Poor connection
①cable poor connection
②poor connection of green cable
Check the resistivity Of the body of Voltage rectifier
Out of spec
Voltage rectifier faulty

## 4.Dismantling, maintaining, repairing and assembling operation:

(1)Lubrication system

(2)Plastic parts

(3)Engine dismantling

(4)Drive pulley, starter, clutch,

(5)Cylinder and, piston

(6)AC Generator

(7)Final transmission mechanism

(8)Crankcase, crankshaft.

(9)Carburetor, reed valve, and auto cock

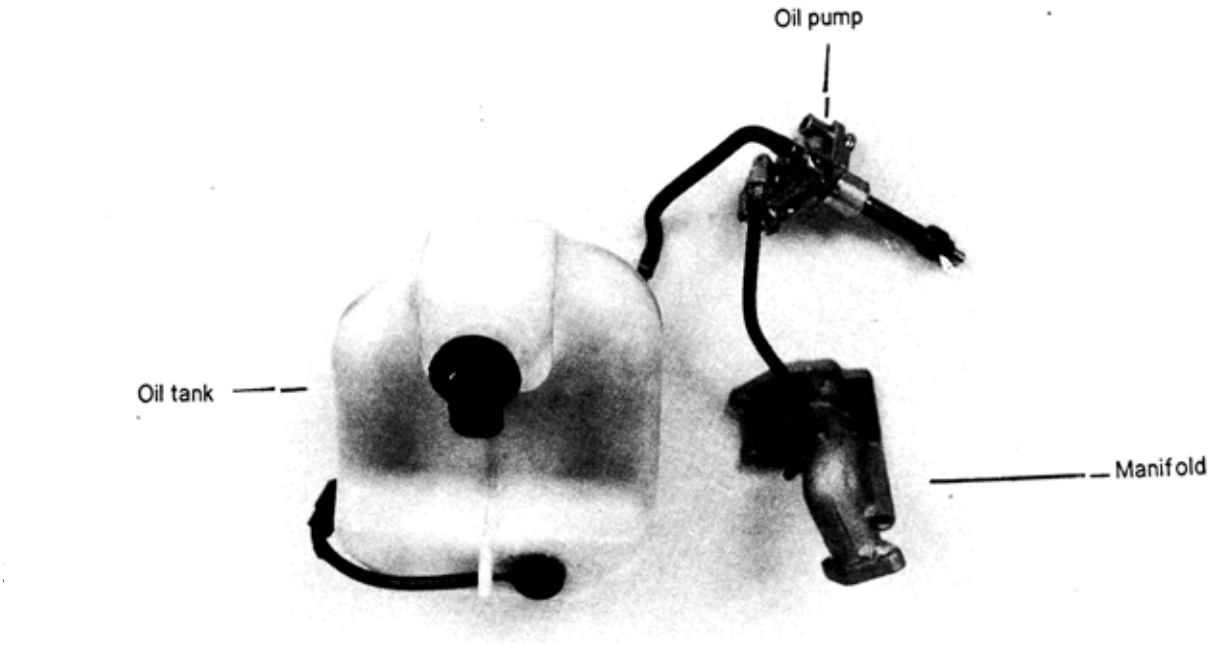
(10)Steering bar, front wheel, front brake comp, front fork

(11)Rear wheel, rear brake, rear damper

(12)Fuel tank, oil tank

## (1)Lubrication system and oil pump

1.Lubrication system diagram.




B. Engine over heating:

a. The adjustment of oil pump is not properly.(1ack of oil)

b. The quality of oil is not good.

C. Piston over burning.

a. There is air in the oil pump system.

b. Oil pump is out of order.

D. The route from oil tank to oil pump is blocked.

a. Ventilation hole on the tank cover is blocked.

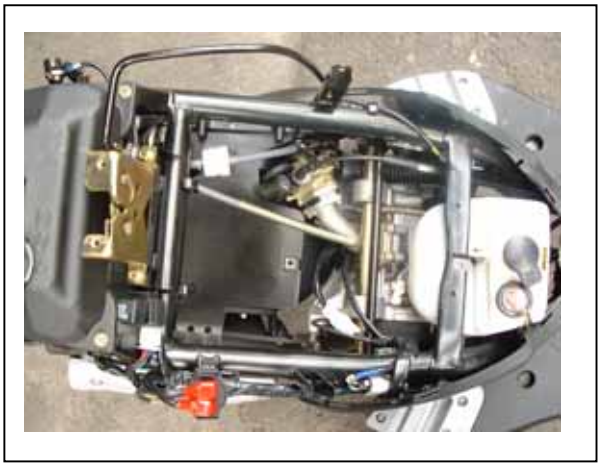
Note:1.When removing oil pump, do not drop any unexpected objects into the oil pipe.

2.Please release the air if there is air trapped in the oil pipe.

3.Locking torque of oil pump:0.8-1.2kg-m

3.Removing the oil pump.

Clean the oil pump and
Crank case before operation



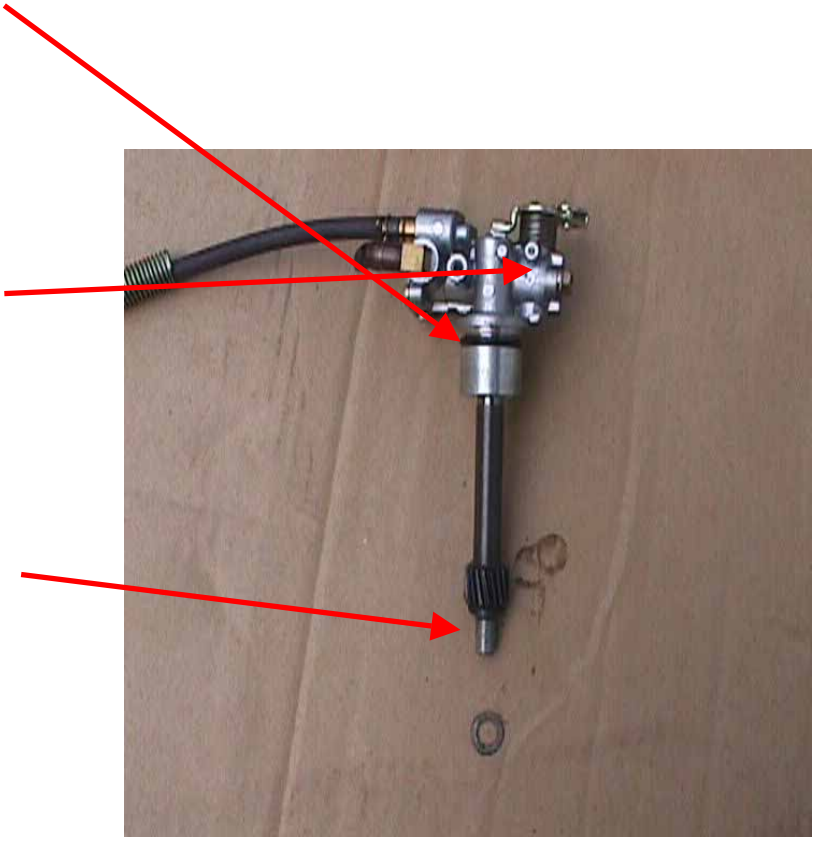
a. Remove the luggage.
b. Remove the input/output oil pipe.
c. Take out the oil pump by removing
The locking screw on oil pump and
Oil gauge cable.

4.check the oil pump.
Remove oil pump and check:
a. O-ring is distorted or not.

b. contact area of crankcase is
injured or not.
d. Oil pump body is damaged or not

e. The movement of control lever
is free or not (110 cc model only)

f. The gears are damaged or not.
g. Check seal and see if there
Is oil leakage or not.
h. Never dismantle oil pump, it
can not function well after
dismantling.



5.Assemble the oil pump.

a. Assemble the oil pump by reversing above procedure.

> O-ring of oil pump should be lubricated by grease or oil, then place on crankcase.
> The contact surface of oil pump and crankcase should be assembled firmly.
> The gears of oil pump should be lubricated by grease.

b. Be sure oil pump screw is tightened.

> After assembling, check the following:
> a. the adjustment of control cables
> b. Is there air in oil pipe.
> c. oil leakage at any location.

6.Releasing air in the oil pump.

> a. If there is air in the oil pipe, it will cause engine lubrication trouble
> b. Releasing air operation means the release of air trapped in the air pipe and oil pump. Please firstly release air from the oil pipe

(a)Fill up specific amount of oil to oil tank.

(b)Place dry cloth under the oil pump.

©Remove oil pipe.

(d)Use injector to fill up the oil in the oil pipe and oil pump body . Be sure the oil pipe and oil pump are full of oil before assembling.

(e)After assembling check if there is still air trapped in the oil pipe.

## (1)Plastic parts of Chassis

A. Dismantling the plastic parts

**1.Removal of luggage compartment**

● Open the seat, take off the screws of the luggage compartment.

**2.Removal of fuel tank**

● Open the lock cover of the fuel tank.

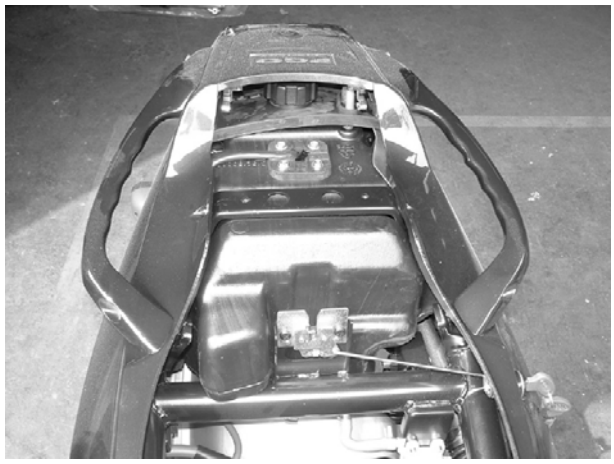
●Take off the fuel tank cover.

●Take off both the right and left handles by removing the screws off.

**3.Removal of left and right hand**

**Side covers.**

●Take off the screws of left and right side covers.

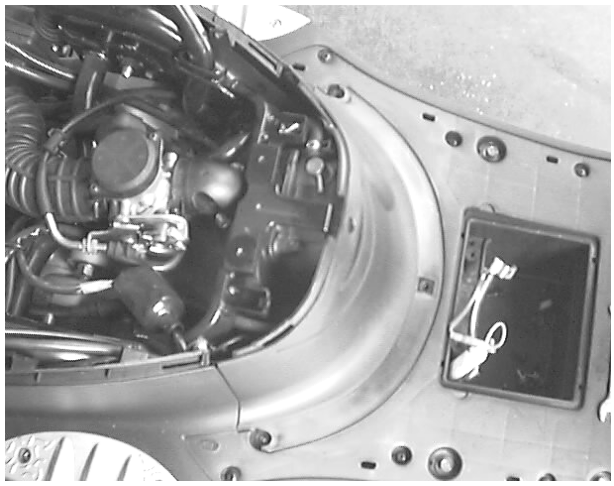


●Remove the left and right hand side cover.

## 4.Removal of front mudguard

●Remove the screws of front fender.

●Take off the front mudguard.

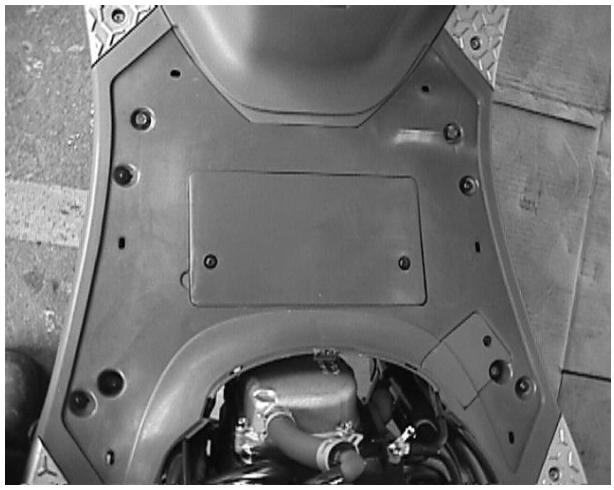


B.Dismantling the Fender

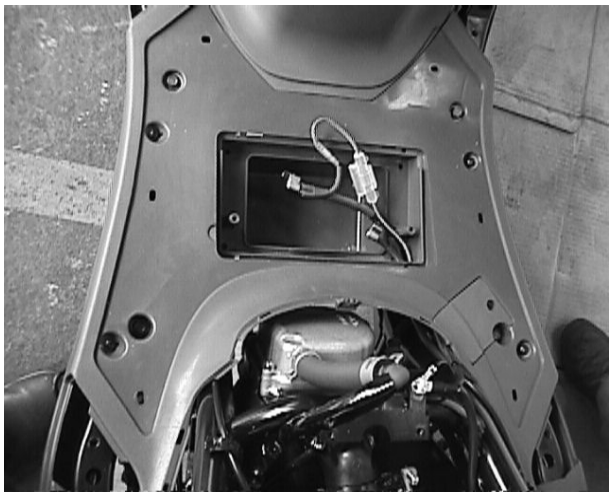
1.Take off the screws of front inner cover And fender.

2.Take off the screws between the front Fender and chassis.

3.Separate the head light and signal lamp Cable.



4.Take off the fender.



C.Dismantling the upper handle cover.

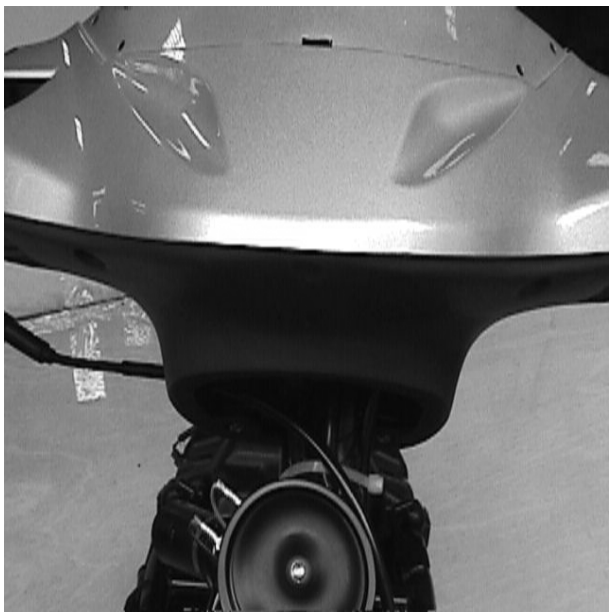
1.Remove the left and right Back mirror.

2.Remove the screws of upper And lower handle cover.

3.Unplug the speedometer cable.

4.Unplug each switch cables.

5.Remove the upper handle cover.



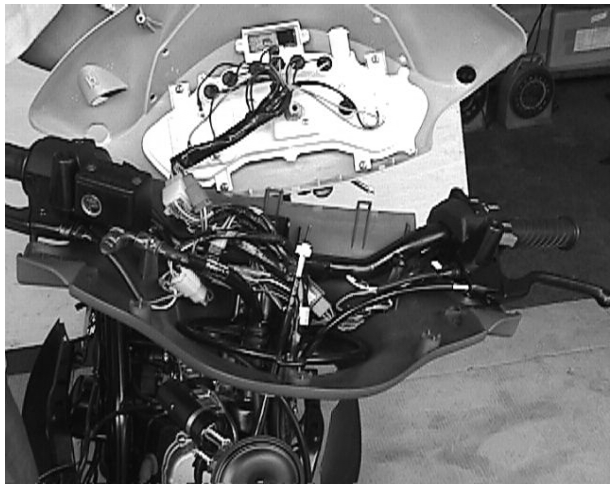
D. Dismantling the step plates and lower

D. Dismantling the step plates and lower

Mudguard:

1.Take off the screws of the four step plates and take off the four step plates.

2.Screwing out the screws of lower mudguard.



E. Dismantling the step floor and front inner cover:

1.screwing out the screws of battery cover.

2.Disconnect the negative, then positive cable.

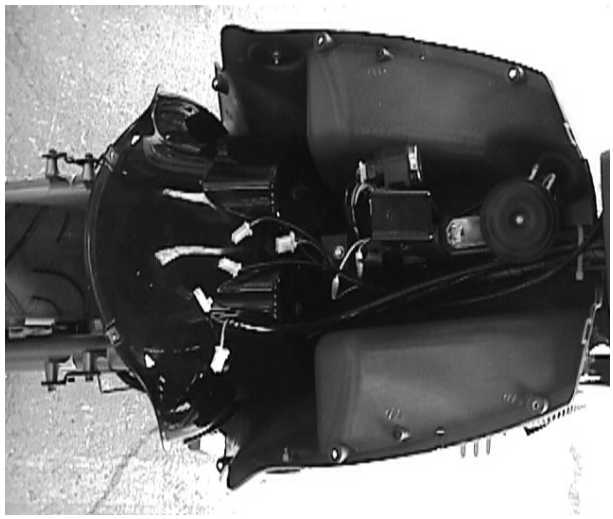
3.Screwing out the screws between the step floor and front inner cover Take off the front inner cover.

4.Pull out both the negative and Positive battery cables, Take off The step floor.

5.When assembling, the procedures Will be reversed.

M6:0.7-1.1kgf-m

M5:0.35-0.5kgf-m



Note: Avoid clamping and scraping the
Cables or pipes by the plastic parts.

**Ⅲ.Checking and Adjustment:**

(1)Regular checking table
(2)Battery
(3)Clean air cleaner
(4)The final reduction mechanism oil
(5)Spark plug
(6)Compression pressure measurement
(7)Ignition timing
(8)Throttle cables adjustment
(9)Idle adjustment
(10)Front brake adjustment
(11)Rear brake adjustment
(12)Tire

## (1)Regular checking table:

1.【〇】mark indicates periodical checking

2.【※】indicates changing the parts

| Item | | | Checking period | | | | | | | Judgement standard | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | gen-eral che-cking | first month or Initial 300km | home | | office | | | | |
| | | | | | every6 months or 5000km | every12 months or 10000km | every1 months or 1000km | every3 months or 2500km | every12 months or 10000km | | |
| Suspension | Handlebar steering column | Loose or swing | ◯ | | ◯ | ◯ | ◯ | ◯ | ◯ | | |
| | | Operation | ◯ | | ◯ | ◯ | ◯ | ◯ | ◯ | | |
| | | Turning angle | | | | ◯ | | | ◯ | | |
| | front fork | Damaged | | | ◯ | ◯ | ◯ | ◯ | ◯ | | |
| | | Shaft fixed condition | | | ◯ | ◯ | ◯ | ◯ | ◯ | | Check from Stering column |
| | | Shaft:loose | | | | ◯ | ◯ | | ◯ | | Check from Stering column |
| Brake | Lever | a. clearance | ◯ | | ◯ | ◯ | ◯ | ◯ | ◯ | Clearance: Front:10-20mm Rear : | |
| | | b. movement of brake | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | | |
| | Brake cable | loose or damage | | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | | |
| | | Change brake cable | | | | | | | | ※every 2 ears | |
| | Brake cam | worn out | | | | | | | ◯ | | |
| | Wheel hub and brake shor | a. clearance between hub and lining | | | ◯ | ◯ | ◯ | ◯ | ◯ | | |
| | | b. brake shoe and brake lining worn-out | | | | ◯ | | ◯ | ◯ | | |
| | | c. wheel hub worn and damaged | | | | ◯ | | | ◯ | standard dia:rear:110.0mm limit of use:rear:111.0mm | |
| Wheel | Front wheel axle | damaged or distorsion | | | | | | | ◯ | | |
| | Rear wheel axle | damaged or distorsion | | | | | | | ◯ | | |
| | tire | Pressure | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ | unit: kg/c ㎡;1 driver<br>front tire: 2.0<br>rear tire: 2.0 | |
| | | Cracked or damaged | ◯ | | ◯ | ◯ | ◯ | ◯ | ◯ | | |
| | | tire thread worn out | ◯ | | ◯ | ◯ | ◯ | ◯ | ◯ | Change tire according to △mark | |
| | | tire surface or other intruders | ◯ | | ◯ | ◯ | ◯ | ◯ | ◯ | | |
| | Axle | Tighten the bolt and nut | | | ◯ | ◯ | ◯ | ◯ | ◯ | Front axle nut torque 5.0-6.0kg-m rear axle nut torque 11.0-13.0kg-m | Nut location |
| | Rim | swingness and damage condition | | | ◯ | ◯ | ◯ | ◯ | ◯ | Swingness limit Vertical: below 2.0mm Horizontal: below 2.0mm | |

| Item | | | Checking period | | | | | | | Judgement standard | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | gen-eral chec-king | first month or Initial 300km | home | | office | | | | |
| | | | | | every6 months or 5000km | every12 months or 10000km | every1 months or 1000km | every3 months or 2500km | every12 months or 10000km | | |
| wheel | Bearing | Clearance on Front axle | | ○ | ○ | ○ | ○ | ○ | ○ | | |
| | | Clearance on rear axle | | | ○ | | | | ○ | | |
| Rear Damper | Spring | Damage Condition | ○ | | ○ | ○ | ○ | ○ | ○ | | |
| | Ass'y part | Loose or damaged condition | | | ○ | ○ | ○ | ○ | ○ | | |
| | Connecting part | loose or | | | | ○ | | | ○ | | |
| | Bracket | loose or damage condition | | | | ○ | | | ○ | | |
| | Suspension arm | Looseness on Connecting Part | | | | ○ | | | ○ | | |
| | Absorber | Oil leakage | | | | ○ | | ○ | ○ | | |
| | | Damaged Condition | | | | ○ | | ○ | ○ | | |
| | | Loose on ass'y part | | | | ○ | | ○ | ○ | | |
| Transmission | Clutch and Shift mec-hanism | Function | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Gear oil leakage | | | ○ | ○ | ○ | ○ | ○ | | LH crank case |
| | Gear oil | Change gear oil | | | ○ | ○ | ○ | ○ | ○ | | 90C.C. / replace 220C.C/Reverse |
| Electric | Ignition | Spark plug | | | ○ | ○ | ○ | ○ | ○ | Clearance: 0.6~0.7mm NCK:BP7HS OR SAME SPEC | |
| | Start Mechanism | Starting motor gear | | | | ○ | | ○ | ○ | | |
| | Wiring | Recharge Function | | | ○ | ○ | ○ | ○ | ○ | | |
| | Battery | Electrolyte level | | | ○ | ○ | ○ | ○ | ○ | Inspect cells | |
| | | Electrolyte gravity | | | | ○ | | ○ | ○ | When 20℃ Specific gravity: 1.270-1.290 | |
| | Wire circuit | Looseness or Damage on connection plug | | | ○ | ○ | ○ | ○ | ○ | | |

| Item | | | Checking period | | | | | | | Judgement standard | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | gen-eral che-cking | first month or Initial 300km | home | | office | | | | |
| | | | | | every6 months or 5000km | every12 months or 10000km | every1 months or 1000km | every3 months or 2500km | every12 months or 10000km | | |
| Engine mechanism | Engine parts | Performance, Noise | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Low speed, Acceleration | | | ○ | ○ | ○ | ○ | ○ | Idling: 1900±100rpm | |
| | | Exhaustion | ○ | | ○ | ○ | ○ | ○ | ○ | | Check the color of exhausting-air |
| | | Air cleaner | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Cylinder, cy1inder head, inlet pipe, locking Condition | | | | | | | ○ | Locking torque Cylinder head: (cold) 1.0-1.2KG-m inlet pipe: cold) 1.0-1.2kg-m | |
| | | Compression pressure | | | | ○ | | | ○ | Using starting motor. 6kg/c ㎡-600rpm for 50cc | |
| | Lubrication system | Oil leakage | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Oil quantity, Dirty | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Oil quantity, | ○ | | | | | | | | |
| | | Oil filter blocked | | | | ○ | ○ | ○ | ○ | | |
| | Fuel system | Fuel quantity | ○ | | | | | | | | |
| | | Fuel leakage | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Clean Carburetor | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Carburetor's Throttle and Choke function | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Carburetor Float height | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Carburetor Adjustment | | | ○ | ○ | ○ | ○ | ○ | | |
| | | Change fuel pipe | | | | | | | | ※every 4 years | |

| Item | | Checking period | | | | | | | Judgement standard | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | gen-eral che-cking | first month or Initial 300km | home | | office | | | | |
| | | | | every6 months or 5000km | every12 months or 10000km | every1 months or 1000km | every3 months or 2500km | every12 months or 10000km | | |
| Lamp system | Function | ○ | | ○ | ○ | ○ | ○ | ○ | | |
| | Dirty or broken | ○ | | ○ | ○ | ○ | ○ | ○ | | |
| Horn, signal Lamp, reflector | Function | ○ | | ○ | ○ | ○ | ○ | ○ | | |
| lock | Function | | | ○ | ○ | ○ | ○ | ○ | | |
| Rear view mirror | Dirty or broken | ○ | | ○ | ○ | ○ | ○ | ○ | | |
| License plate | Dirty or damaged | ○ | | | | | | | | |
| Dashboard | Function | ○ | | ○ | ○ | ○ | ○ | ○ | | |
| Muffler silencer | Losseness or Damage on Ass'y part | | | ○ | ○ | ○ | ○ | ○ | | |
| | Function | | | | ○ | | ○ | ○ | | |
| chassis | Loose or Damaged | | | | ○ | | ○ | ○ | | |
| The previous Abnormal case | Confirm it does Not happen Again | ○ | | | | | | | | |
| others | Chassis Lubrication | | | ○ | ○ | ○ | ○ | ○ | | |
| | Decarbonate on Combustion room And muffler | | | | ○ | | | ○ | | |

## (2)Battery: Recharge when power is out

1.remove the floor mat.

2.Screwing out the two screws on the battery cover. Remove the battery cover.

3.Remove the negative cable and then the positive cable,→take out the battery to recharge.

4.To re-assemble the battery, please follow the opposite procedure of disassembling after Recharging.

**Negative Pole** **Positive Pole**

Note:

A. The battery is totally sealed, do not remove seal bolts when recharging

B. It's no need to add any electrolyte for this re-filling free battery

Please recharging (12V) by the following currency

Standard recharging:0.4A* 5-10 hr or rapid recharging:4A* 30min.(50c.c.)

## (3)Cleaning air cleaner

1.Remove air cleaner cover

2.Take out the air cleaner filter

3.clean the filter by the compressor air.

4.Assemble the air cleaner by the opposite procedure.

| Note: Do not start the engine When the air cleaner is Not installed |
|---|

## (4)The final reduction mechanism oil

1.Change the oil in the gear box:

a. Turn off the engine after warm up.

b. Put a bowl under the engine.

c. Remove the draining bolt and
Filler bolt to drain the gear
oil off.

d. Lock the draining bolt before
refill 90c.c gear oil and
then lock the filling bolt.

e. Locking torque: 1.8kg-m

| Note: Be sure the crankcase, tire or wheel are cleaned if there is grease/oil on it |
|---|

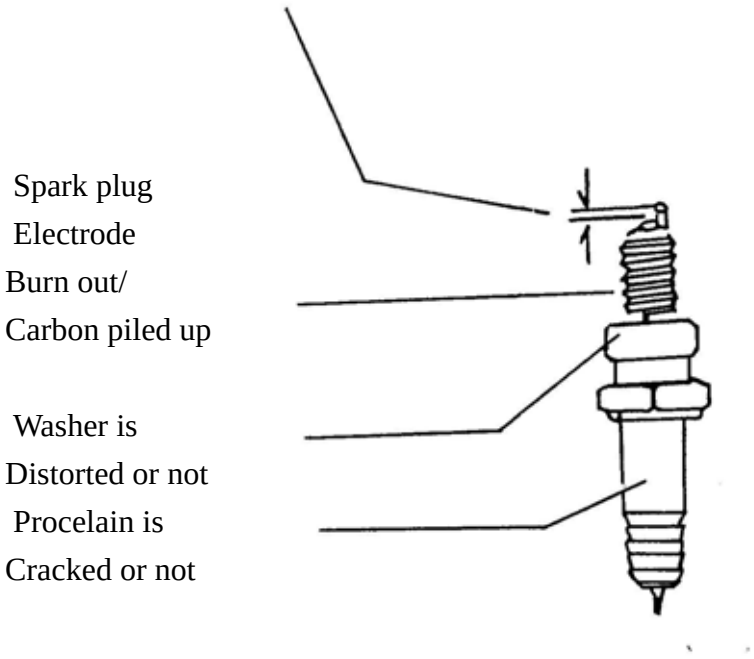
## (5)Spark plug

1.Remove spark plug

2.Check the spark plug electrode and check if it is
Burnt out or not and carbonized or not

3.Clean the electrode, whether it is dirty

4.Spark plug specification
NGK:BP7HS or same spec.
Gap of spark plug:0.6~0.7mm



## (6)Compression pressure measurement:

1.Measure it when the engine is warm.

2.Remove the cover.

3.Remove spark plug then place comp-
Ression pressure gauge.

4.Fully open the throttle, and kick to kickstarter 5 times continuously, measure the compression Pressure.

5.Compression pressure:
50cc: 6kg/c ㎡-600rpm

6.when the compression pressure is too low, check the following:
a. cylinder head gasket cracked.
b. piston cylinder worn out.
c. piston ring worn out.

7.If the comperssion pressure is too high it may be due To the carbon piled up on combustion chamber and piston tip.

## (7) Ignition timing:

This scooter is using CDI set, it is no need to adjust ignition timing.
If ignition timing is not correct, check the CDI sets AC magneto, change it if it is abnormal.

checking ignition timing:

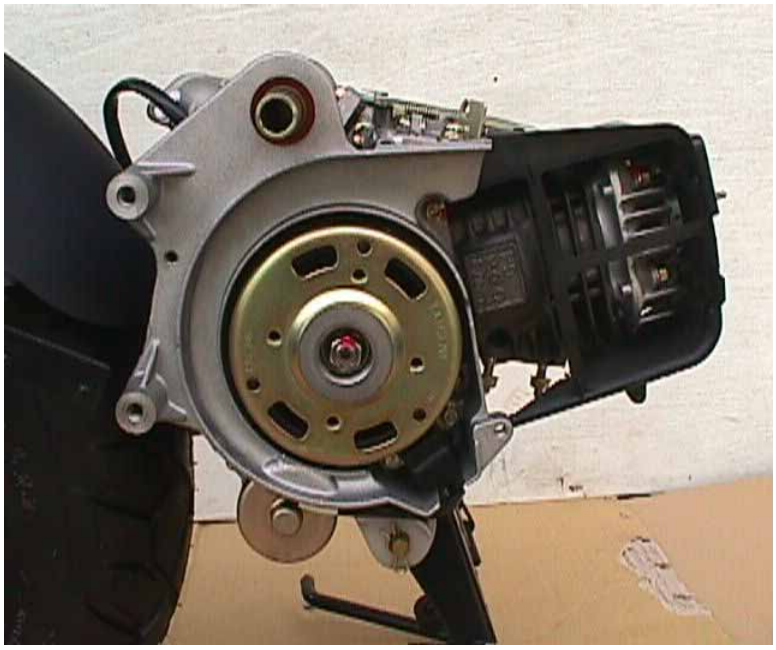
1.remove seat the luggage compartment

2.Remove right body cover

3.Remove the fan case.

4.Check with ignition timing lamp.
keep the engine running at 1,900 ± 100 r.p.m the checking mark should lay in $\pm 3^0$ apart From “F”, mark.

5.ignition timing: B.T.D.C.
17° ±3° / 1900rpm



## (8)Throttle cables adjustment:

1.check the clearance of throttle.

2.Normal clearance:1.5-3.5mm

3.Adjust it by rotating the adjust nut change it if the throttle cables can’t be adjusted.

## (9) Idle adjustment:

Note: adjust it when the engine is warm.

1.remove left body cover

2.start the engine and connect the tachometer

3.adjust the throttle valve screw
to the specified revolution 1900±100rpm.

4.if the idling rpm is still unsteady or
fuel up is not smooth, please adjust it by
followings.

a. Screw in the air adjust screw clockwise,
then screw out counterclockwise.
Recommended loop: 1 3/8x1/2

b. Rotate air adjust screw clockwise and counterclockwise to find out the highest revolution location.

c. Rotate the throttle valve screw to idling condition.

d. Fuel up gradually until the idling running rpm is steady.

e. If the rpm is still not steady please repeat above procedure.

## (10)front brake adjustment:

1.check the clearance of front brake lever.
Clearance:10-20mm

2.if the clearance is beyond, standard check whether:

a. The air mix into the pipe/caliper.

b. The oil brake system is leaking.

Note:
Try brake lever to see if it's loose.
Check the brake fluid. Once air mixed in
The fluid pipe, which will reduce or
Damage the brake efficiency or even its
Function.

3.check the fluid level:

a. Refill the brake fluid when the level is under the LOWER line.

b. Brake fluid specification: SAE J-1703F-DOT3&DOT4.

Note:

a. To prevent the fluid splitting onto the parts or clothes, put a piece of cloth on the bottom when refilling.

b. Be caution not to mix water or particles into the master cylinder when refilling.

c. Never use the fluid not complied with spec.

d. In case the fluid stains on the eyes, wash with water at once and then ask for medical care immediately.

## (11)Rear brake adjustment

1.Check the clearance
Of rear brake lever.
Clearance: 10-20mm
2.If the clearance is
beyond the above standard,
Adjust it by rotating the screw.
a. Left-handed rotation-enlarge
the clearance.
b. Right-handed rotation-reduce the clearance.

Note:
When the arrow of rear brake indicator align with the arrow of left crankcase, change the brake lining.

## (12)Tire:

1.Check the tire air pressure(when it's cold)
2.Tire pressure:
Front tire: 2.0 kg/c ㎡
Front tire: 2.0 kg/c ㎡
3.Tire dimension:
Front tire: 120/70-12
Rear tire: 130/70-12

Note:
a. check and adjust the tire pressure when it is too low.
The pressure is according to the carrier, Driver, passenger, accessories and cruise Speed.
b. Proper loading is very important for steering, riding, braking, performance and safety.
c. Never carry any parcel unfastened.
d. Load the heaviest parcel on the center of vehicle, balancing the weight on both sides.
e. Beware of the weight loaded properly and check the tire pressure. The total weight of carrier, driver, passenger, and accessories cannot exceed the approved limit, An overload vehicle is easy to cause tire damage and accident for rider.

4.Check is there any sharp Object pierce the tire.
5.Check the depth of tire Thread.
a. Depth(front & rear):
According to mark of tire "▲"to change a new tire

(3)Engine Dismantling

A. Dismantling engine.

1.Take off the luggage compartment.

2.Take off the left and right body covers.

3.Take off the lower mudguard fender.

4.Remove vacuum pipe, fuel pipe, auto choke, cap of spark plug, rear Brake cable carburetor pipe, engine flywheel shelf's nut, starter Motor cable plate and rear damper bolt.

5.Remove the engine.

B. Installing Engine.

1.To install engine, please reverse the above procedures.

2.Locking torque:

M8: 2.0~3.0kg-m

M10: 3.0~4.0kg-m

M12: 5.0~6.0kg-m

3.After installing, please do the following checking and adjustment:

Checking and adjustment:

a. Wiring connection.

b. Throttle cable and oil control cable.

c. Rear brake adjustment.

d. Fuel and oil route.

## (4)Drive pulley, starter & clutch

A. Troubleshooting:

a. Engine starts, but vehicle does not move.

1.driving belt worn out

2.driven plate worn out

3.clutch lining worn out

4.driving plate's spring broken

b. The vehicle stops or trembles when running,

1.clutch lining spring cracked or broken.

c. Can't reach high speed, no pick-up

1.driving belt worn out.

2.Driving plate spring distortion.

3.Weight roller worn out.

4.Driving plate abnormal.

Note:

No grease and oil allowed to stain on driving belt and driven plate.

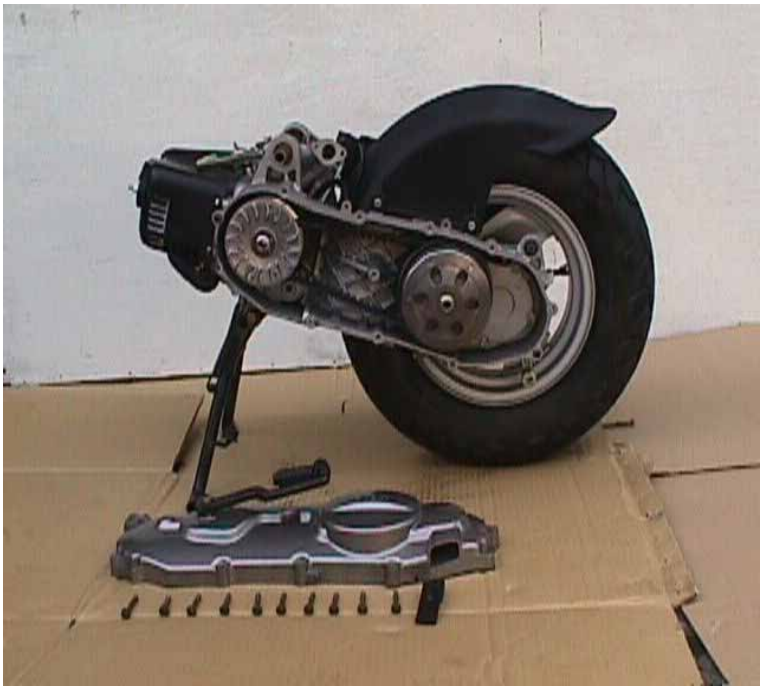
B. CVT parts measurement data

| Item | Standard value(mm) | Limit of use(mm) |
|---|---|---|
| Model | 50cc | 50cc |
| The inner dia. of Slide driving plate | 20.035-20.085 | 20.123 |
| The outer dia..of boss, movable Driving plate | 19.960-19.974 | 19.911 |
| Belt width | 18.0-19.0 | 17.0 |
| Clutch lining thickness | 3 | 1.5 |
| Clutch outer diameter | 117.0~117.2 | 117.5 |
| Driving plate spring, free length | 87.9 | 82.5 |
| The outer diameter of driven plate sets | 33.965~34.025 | 33.95 |
| The inner diameter of slide Driven plate | 34.000~34.025 | 34.070 |
| The outer diameter of weight Roller set | 15.992~16.008 | 15.50 |

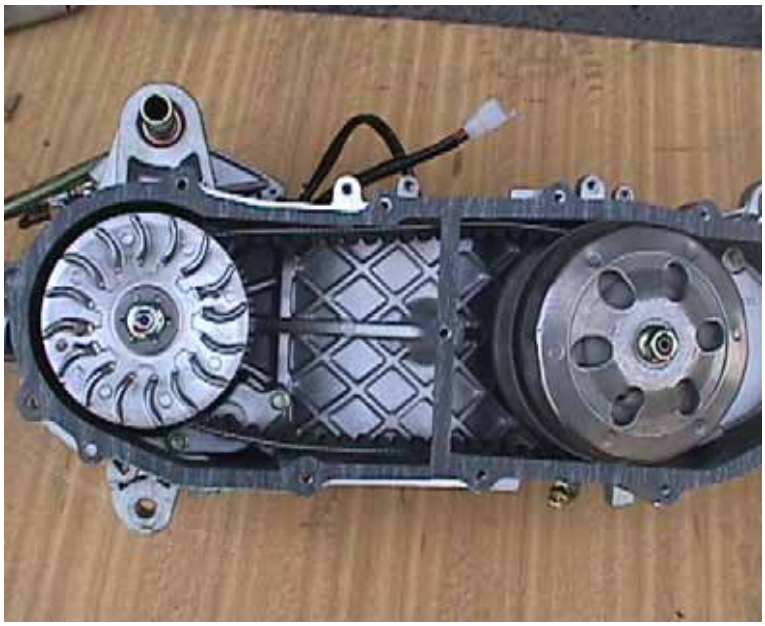
C. Driving pulley.

1.Take off the 10 screws of left Cover, remove the left cover.

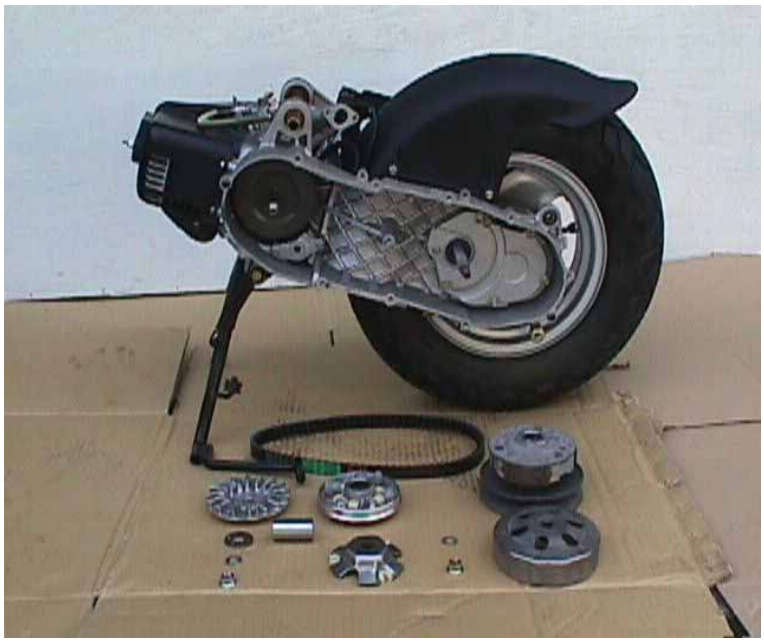
2.Take off the left cover.



3.Remove the fixing nut of the clutch.



4.Take off the ramp plate.

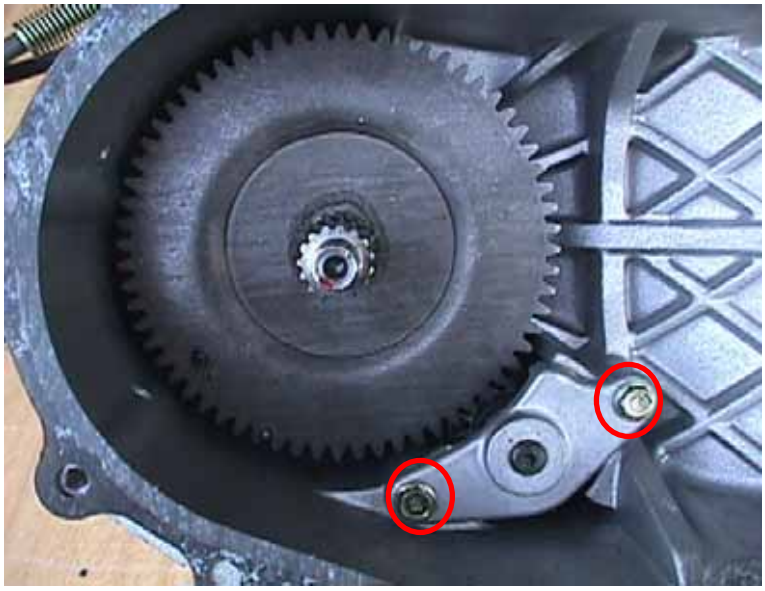


5.Take off the belt and the rear clutch.

6.Take off the driving plate.

- Take off the driving gear start set.

7.Remove the start idle gear fixing plate.



8.Take off the idle gear.

9.To assemble the driving pulley, please reverse above procedure.

| Locking torque:<br>1.Nut of driving pulley:M10: 3.2~4.0kg-m<br>2.Locking nut of clutch:M10: 3.5~4.0kg-m |
|---|

10.Checking the driving belt

(1)check whether it is cracked or not or its rubber and fiber are loose or not check also if they are extraordinarily worn out.

(2)driving belt width:

limit of use : change it below 17.0mm.

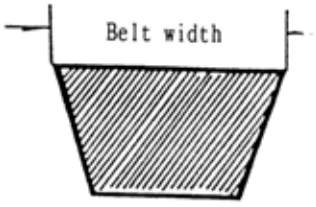
11. Disassemble the slide driving plate set

(1)Remove the bush of slide driving plate

(2)Remove the screw, and disassemble the cover of slide driving plate.

(3)Remove RAMP plate.

(4)Remove weight roller.




12.Checking list:

(1)Check the wearing condition of the weight roller.

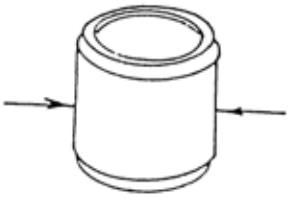
limit of use:change it when below 15.5mm.

(2)Check inner dia of slide driving plate's gasket.

| Limit of use:<br>50cc:Change it when above 20.123 mm |
|---|

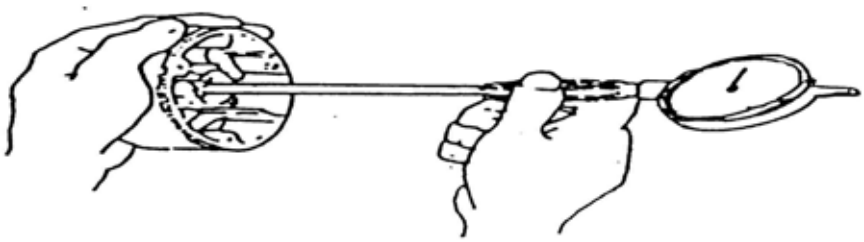
(3)Check the wearing condition for driving pulley surface.

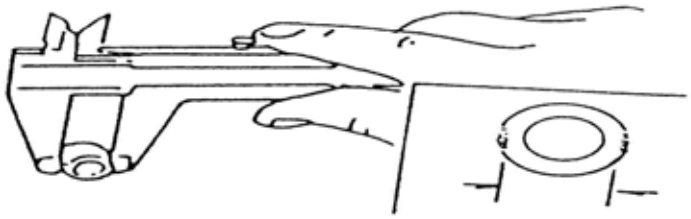
(4)Check the outer diameter of the driving plate's boss.



Check the wearing condition

| Limit of use:<br>change it when below 19.911mm |
|---|





13.Assemble the slide driving plate.

(1)Clean the inner surface of slide driving plate, then assemble the roller.

(2)Assemble the ramp plate.

(3)Please reverse the procedures of disassembling to finish assembling.

D. Starter dismantling

1.Dismantle the left crankcase cover

2.Remove the hexagon nut, then remove the starter lever.

3.Remove five screws of isolating plate.

4.Remove the stater spring from the start returning positioner.

5.Remove the driven gear comp of kick starter.

6.Remove the retaining c-type clip

7.Remove the spindle comp.

Of kick starter.

8.Checking the starter

a. Check the wearing condition of the outer diameter of the spindle comp and the inner diamter of bush and gear.

b. Check the wearing condition of the shaft of driven gear comp, gear sets and ratchet.

9.Assembling the starter

To assemble the starter, please follow the opposite procedures of dismantling.

Locking torque: M6:1.0~1.2kg-m

Note:

①Make sure that on end of the torsion spring is hooked on the groove of driven gear, and another end of the torsion spring is hooked on the poled inside the left crankcase.

②Put some grease on shaft and gear sets before assembling.

E. Clutch driven pulley

1.Dismantle the clutch

a. Remove left crankcase cover.

b. Remove driving plate.

c. Remove driving belt.

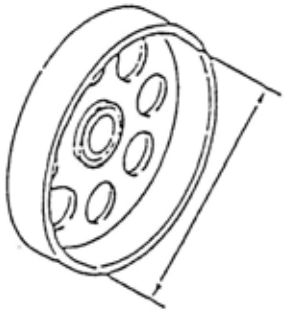
d. Remove the M10 locking nut, then the clutch.

2.Assembling the clutch: please follow the opposite procedure of dismantling.

| Locking torque:<br>M10: 3.5~4.0kg-m |
|---|

3.Checking the clutch:

| Dismantling the clutch needs the special<br>Tool. please contact your dealers. |
|---|



a. Check the clutch driven face.

Check the clutch cover about its wearing

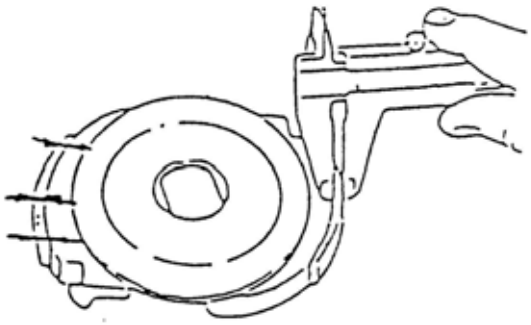
Condition and inner diameter measurement.

| Limit of use:<br>50cc:Change it when above 117.5mm |
|---|

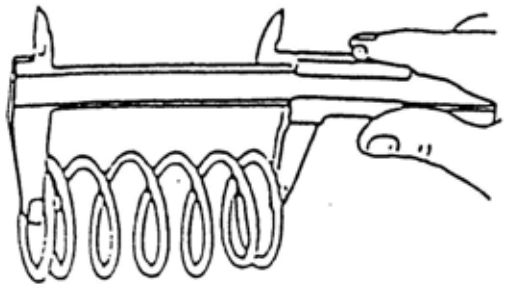
b. Check the clutch lining wearing condition

and measure the lining thickness

limit of use:change it below 2.5mm.



c. Check driven spring free
length: standard: 87.9mm
Limit of use:change it as it
Is below 82.5mm(50cc)



d. Check wearing condition of
driving plate set.
Outer diameter measurement:
Limit of use:change it as it
Is above 33.950mm

e. Check wearing condition of
slide driven plate.
Inner diameter measurement:
Limit of use:change it as it
Is above 34.070mm

f. Check is there any wearing
occur to the ditch.

g. Check wearing condition of
seal location, if necessary
change a new one.

## (5)Cylinder and piston:

### A. Troubleshooting.

a. compression pressure is too low, difficult to start engine and running unsmoothly.

1. Cylinder head gasket cracked.
2. Spark plug is not well-locked.
3. Piston ring worn out or cracked.
4. Cylinder, piston worn out.
5. Reed valve is defective.

b. compression pressure is too high, engine overheating or abnormal noise.

1.piston tip has too much carbon piled up.

c. Abnormal piston noise

1. cylinder and piston worn out.
2. Piston pin hole or piston pin worn out.
3. Connecting rod small-end or bearing worn out.

d. Abnormal piston or cylinder noise

1.piston ring worn out or cracked.
2.Cylinder worn out or cracked.

### B. The operation notice:

1.clean before operation to avoid particles dropping into engine.
2.The connect surface of gasket must be clean.
3.Dismantle the cylinder and the cylinder head by screw driver.
Do not scratch the contact surface.
4.Cylinder inner surface and piston outer surface can't be scratched.
The contact surface should be lubricated by specified oil.

### C. PISTON & CYLINDER DATAS:

| Part name/description | | | Standard Value (mm) | Limit of use (mm) |
|---|---|---|---|---|
| Cylinder head | Flatness | | | 0.100 |
| cylinder | Bore | | 39.995~40.015 | 40.050 |
| Piston/ Piston ring | Clearance b/w Piston ring piston and | Lst ring | 0.05~0.06 | 0.10 |
| | | 2nd ring | 0.05~0.06 | 0.10 |
| | Piston outer diameter | | 39.950~39.970 | 39.895 |
| | Measuring location of piston outer dia. (12mm from the lower end of skirt) | | | |
| | Clearance b/w piston and cylinder | | 0.045~0.065 | 0.10 |
| | Piston pin hole inner dia | | 13.022~13.013 | 13.045 |
| Piston pin hole inner diameter | | | 10.002~10.008 | 10.025 |
| Piston pin outer diamerer | | | 9.994~10.000 | 9.970 |
| Clearance between piston and piston pin | | | 0.004~0.018 | 0.030 |
| Connecting rod small end inner dia | | | 13.996~14.007 | 14.025 |

## D. cylinder head, cylinder, and piston dismantling.

1.Remove the engine.

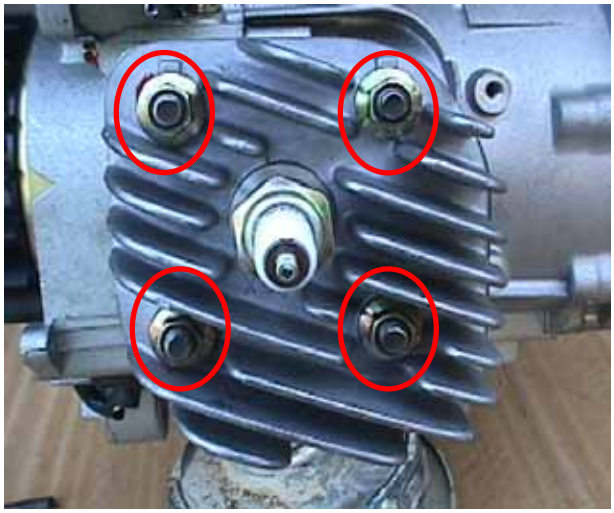
2.Screwing out the two M6-bolt of cooling cowl.

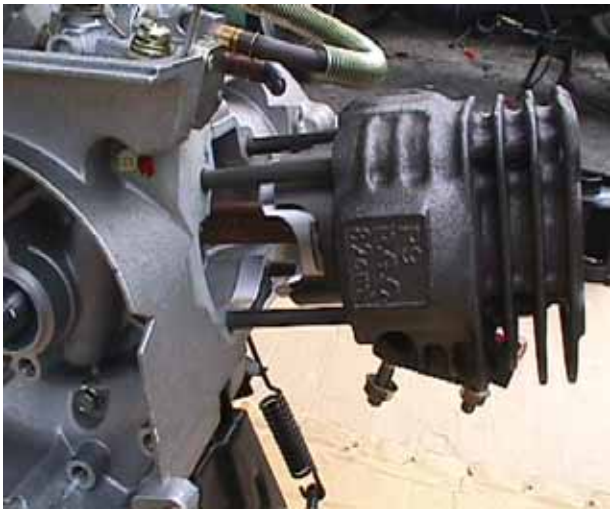
3.Screwing out the two M6-blot of fan cover.

4.Remove the cooling cowl and fan cover.

5.Remove the spark plug.
6.Remove the two M6 nuts on the muffler and cylinder.
Also remove the two M8-bolt of crankcase.
7.Remove muffler.

8.Remove the four M7-nut on the cylinder head, then remove the cylinder head and cylinder head gasket.





9.Remove the Cylinder and the gasket.

10.Remove the c type clip on the piston and piston pins by the nipper.

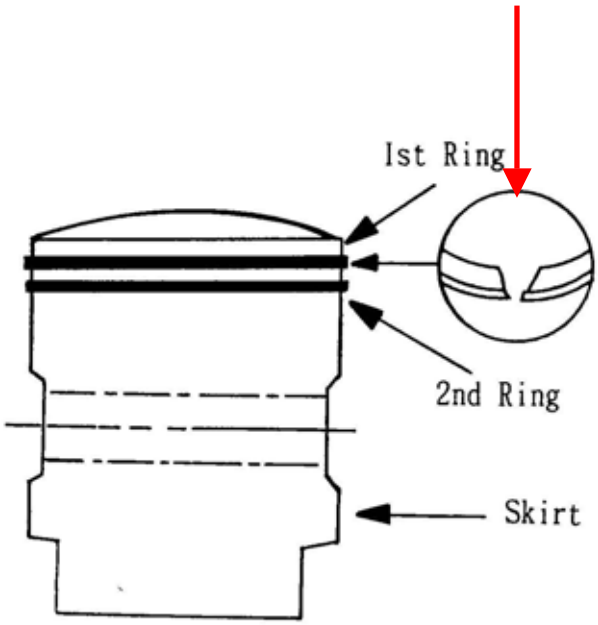
•Take off piston.

11.Dismatling of the piston ring Take off the first piston ring then the second ring.

12.When assembling please reverse the procedures of dismantling.

| Locking torque: |
| --- |
| M7:1.0-1.4kg-m |
| M6:1.0-1.2kg-m |

Opening end of piston ring



## (6)A.C. Generator, Flyweel

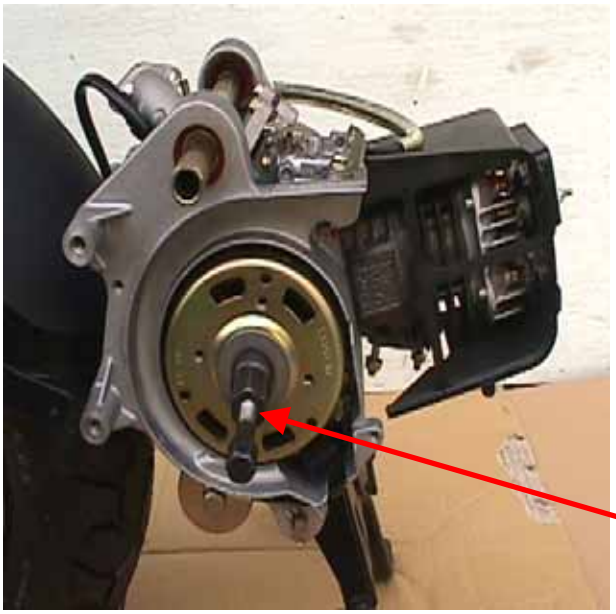
A.Dismantling AC generator

1.Remove fan cowl.

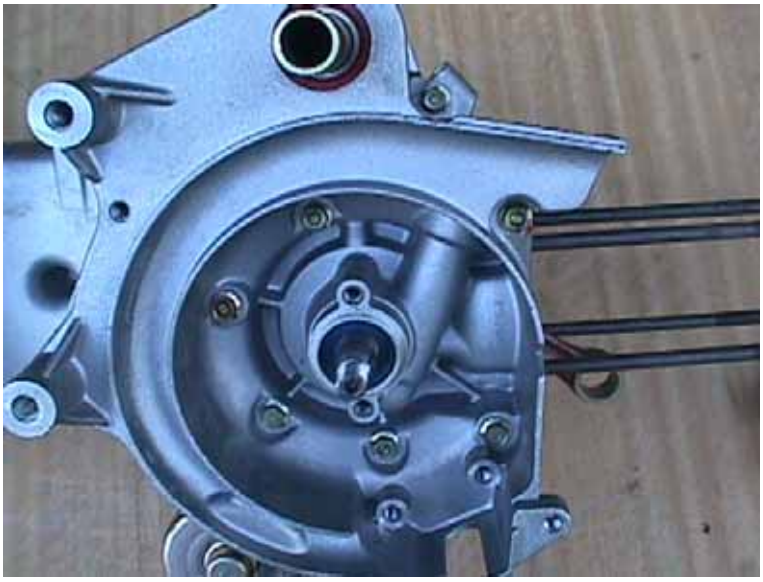
2.Remove the M6 screws(4)

3.Remove Screws of flywheel magneto

4.Remove the AC flywheel magneto by special tool.



5.Remove the flywheel.

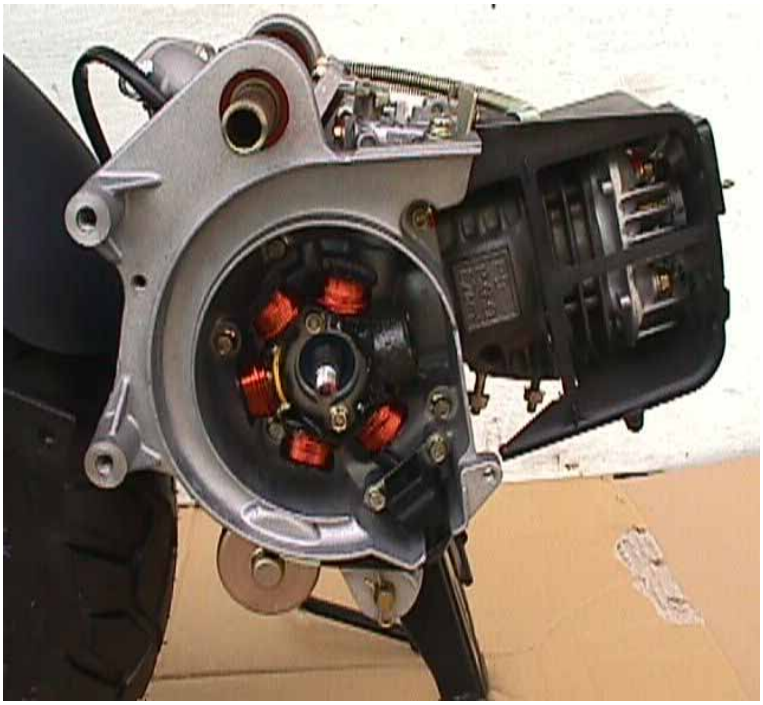


6.Remove the electric plug of AC Flywheel magneto.
Take out the magneto.

## B. Install AC generator

To install, please reverse the dismantling procedures.

Locking torgue:
M6: 1.0~1.2kg-m
M10: 3.2~4.0kg-m



## (7)Final Transmission Mechanism

A. Trouble shooting

- ●Engine can be started, but vehicle doesn’t move.
  1.Gear worn-out or cracked.
  2.Gear burnt out.
- ●Noise occurs when running.
  1.Gear worn out, burnt or gear surface damaged.
  2.Bearing worn out or loosen.
- ●Oil leakage
  1.Too much oil.
  2.Seal worn out or damaged.

B. Disassemble the final transmission mechanism.

1.Remove the rear wheel.

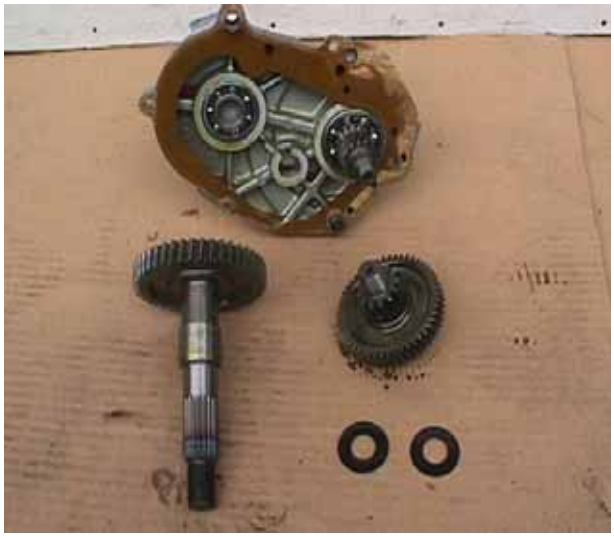
2.Drain off the oil in the gear box.

3.Remove the 6 bolt in gear box cover

4.Take off the gear box.

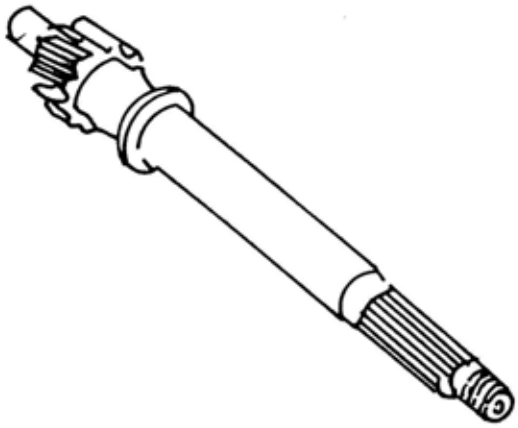
5.Take out the final reduction gear and idle gear shaft.

6.Clean up the gear box

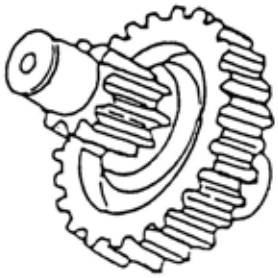


C. Check the final transmission mechanism

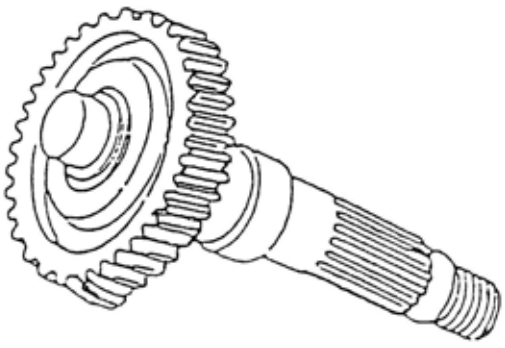
1.Check the wearing condition of the driving shaft and gears.



2.Check the wearing condition of the idle gear shaft and idle gears.



3.Check the wearing condition of the final reduction gear.



4.Check the wearing condition of the oil seal and bearing.

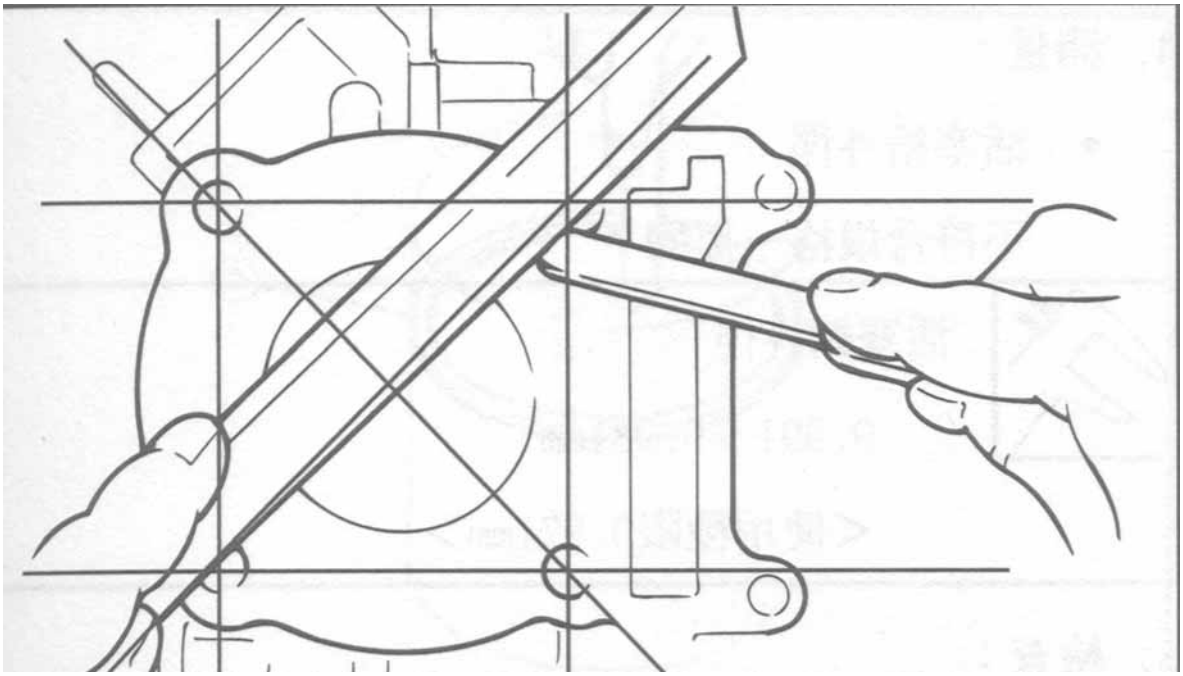
**D. Assemble the final transmission mechanism:please follow the opposite procedures Of disassembling. After locking the drain bolt, refill 90c.c of gear oil, SAE 85W/140.**

| | |
|---|---|
| Locking torque: | M6: 1.0~1.2 kg-m |
| | M10: 3.5~4.0 kg-m |
| Drain bolt: | M8: 1.8 kg-m |

## E. Check for the flatness of cylinder head & cylinder.

Check the flatness of contact surface of cylinder head & cylinder.

| |
|---|
| Limit of use: If it exceeds 0.1mm<br>Change a new one. |



## F. Combustion chamber cleaning

●Clean out the carbon piled up in combustion chamber.

●Do not scratch the combustion chamber and contact surface of the cylinder during cleaning operation

## G. Check cylinder and piston:

1.Check the wearing and damage condition on the contact surface of the cylinder and piston.

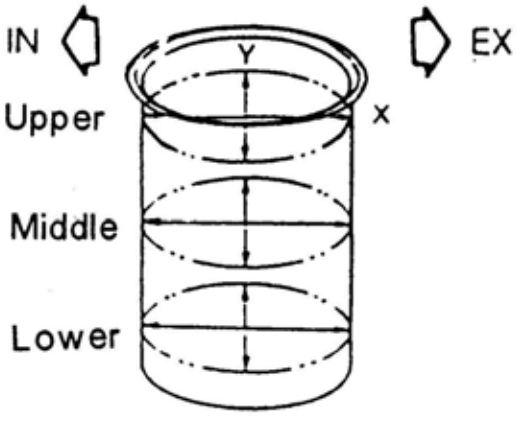
2.Clean out the carbon on the cylinder exhausting port.

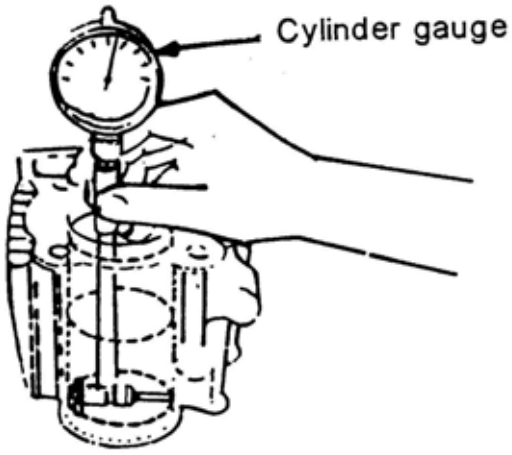
| |
|---|
| Be careful not to scratch the inner Surface of cylinder. |

3.Cylinder bore measurement:

(1)Measure each point (A)(B)(C) orderly, and in X.Y. axis to find the smallest value.

(2)Limit of use: 50cc-change it when over 40.050mm



4.Piston outer diameter measurement:

(1)Measure at the skirt area where is 12 mm from the skirt lower end of skirt.

(2)Limit of use: 50cc-change if when below 39.895mm

(3)Calculate the clearance between the cylinder and piston.

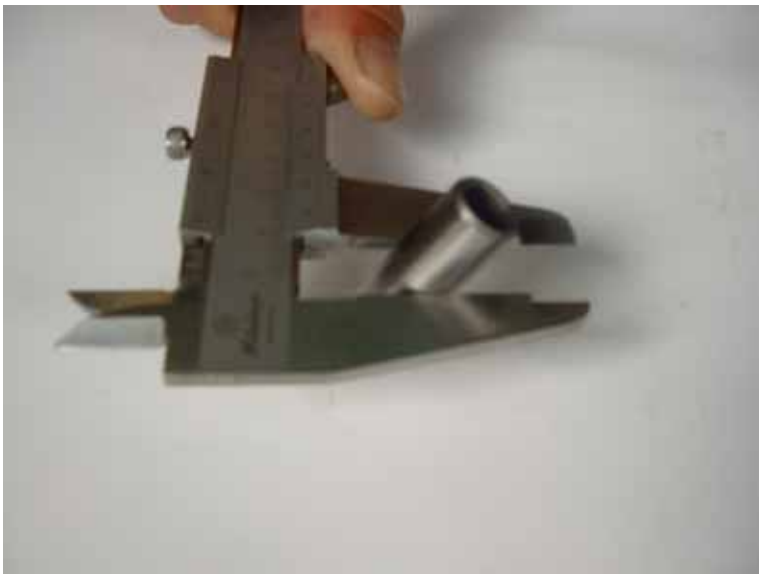
| Limit of use: change it when over 0.100mm |
|---|

5.Inner diameter measurement of the piston pin hole

Limit of use: chang it when over 14.032mm

6.Outer diameter measurement of the piston pin

limit of use: change it when under 9.970mm(T-REX 50cc)



7.Check piston ring:

Measure piston ring gap:

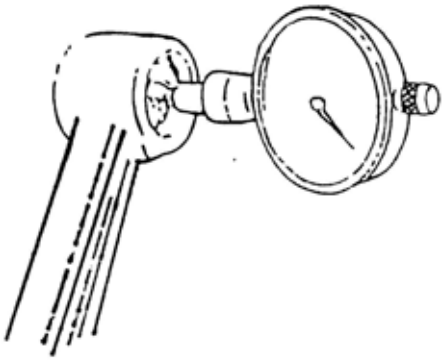
Limit of use: change new ones when the first ring and second ring are over 0.4mm

| |
|---|
| Push the piston ring into the cylinder<br>By piston, the measure the gap |

8.Check connecting rod small end

(1)lnstall piston pin, bearing onto the connecting rod small end, then check the looseness of the piston pin.

(2)Measure the inner diameter of the connecting rod small end.



| Limit of use: replace a new one when over 14.025mm.(t-rex 50cc) |
|---|

## H. Installing cylinder and piston

1.Place the piston ring into the second ring ditch first, then install the piston ring into the first ditch.

2

a. Piston ring should be installed into piston ring ditch by even force

b. After assembling, be sure that the piston ring sliding surface is at the same height as the piston outer surface.

c. If the piston ring can not fit into the ditch, please clean up the carbon in the piston ring ditch or piston ring itself.

3.

a. Piston ring must be installed in the correct location.

b. After installing the piston ring, it should be able to rotate freely.

c. If it is necessary to change the new piston ring, it must change the whole set.

4.

a. The location of the piston ring gap and the lock pin must be in opposite side.

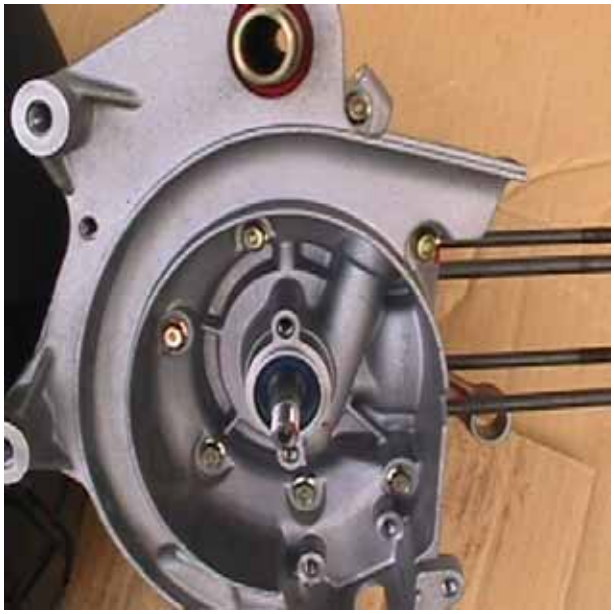
b. The mark"→" on the piston tip must be pointing to the exhausting port.

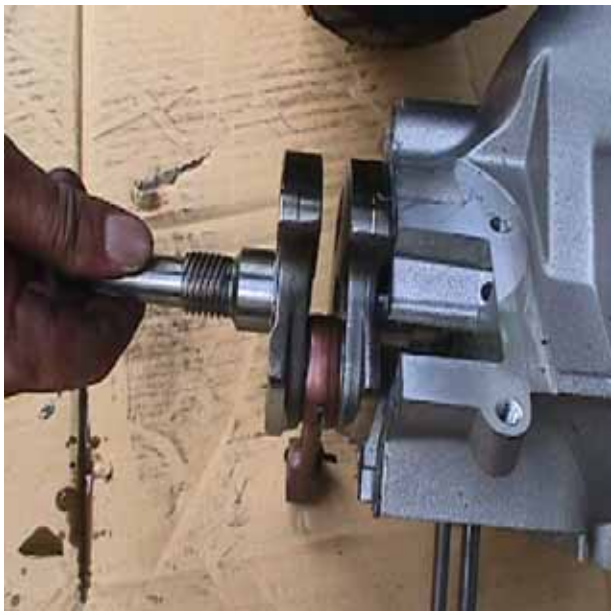
c. Lubricate the piston pin before installation.

5.Please follow the opposite procedure of dismantling to install cylinder and cylinder head.

## (8)Crankcase, Crankshaft:

A. Disassembling diagram





B. Troubleshooting.

Engine noise:

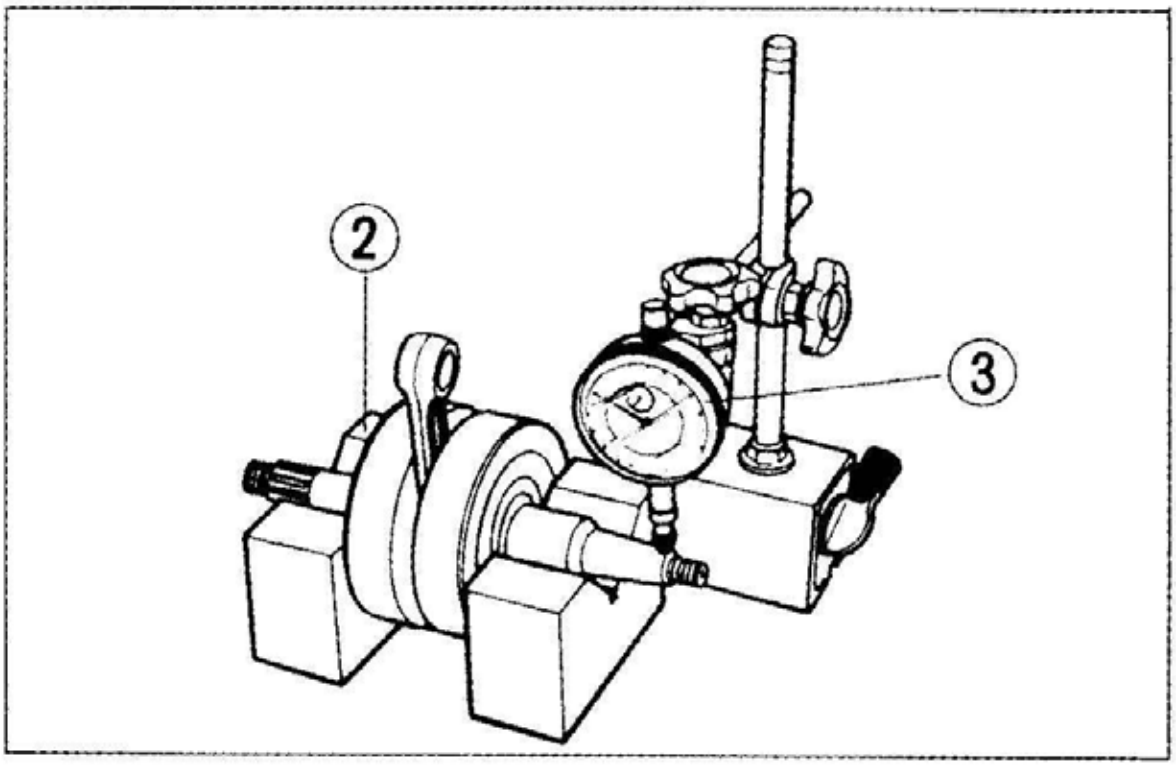
1.The bearing of final transmission mechanism is loose.

2.Crank pin bearing is loose.

3.The bearing of gear box is loose.

C. Data

| Measuring Item | Standard value | Limit of use.(mm) |
|---|---|---|
| Clearance of connecting rod big end (Parallel direction to rod) | 0.20-0.50 | 0.71(50cc) |
| Clearance of connecting rod big end (Perpendicular direction to rod) | - | 0.04 |
| Swingness of the crank shaft neck | 0.03 | 0.10 |



D. Dismantle the crankcase and crankshaft please follow the following procedures:

1.Remove the engine.

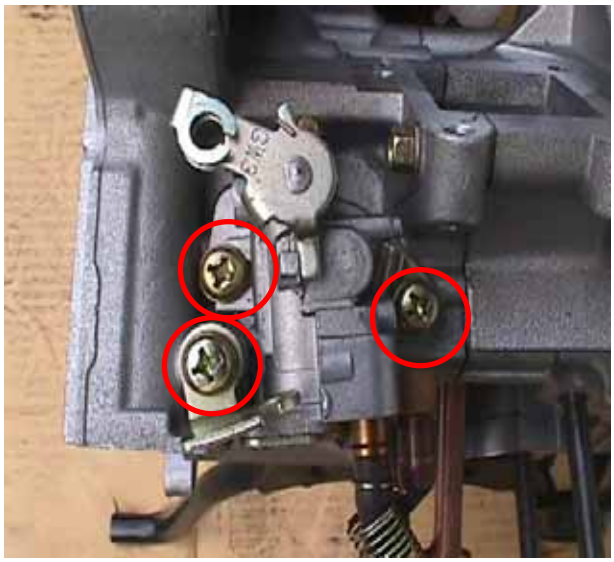
2.Remove the left crank case, the driving pulley (driving plate) clutch and belt.

3.Remove the air cleaner.

4.Remove the carburetor.

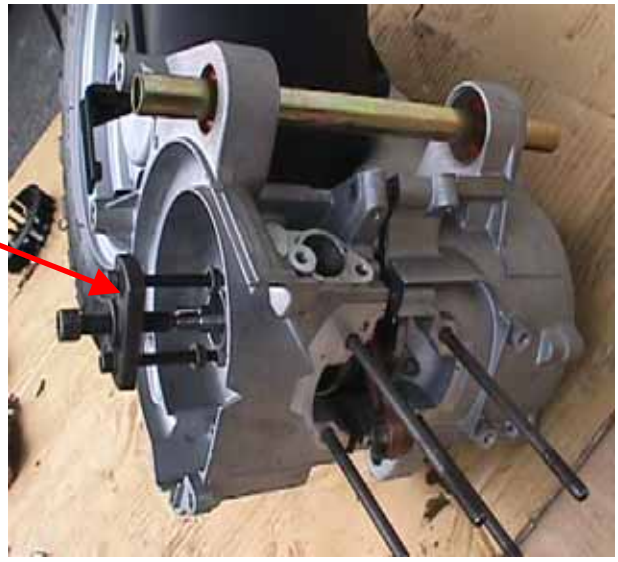
5.Remove the intake manifold and reed valve.

6.Remove the oil pump, fan cowl and fan itself.



7.Remove the AC flywheel magneto.

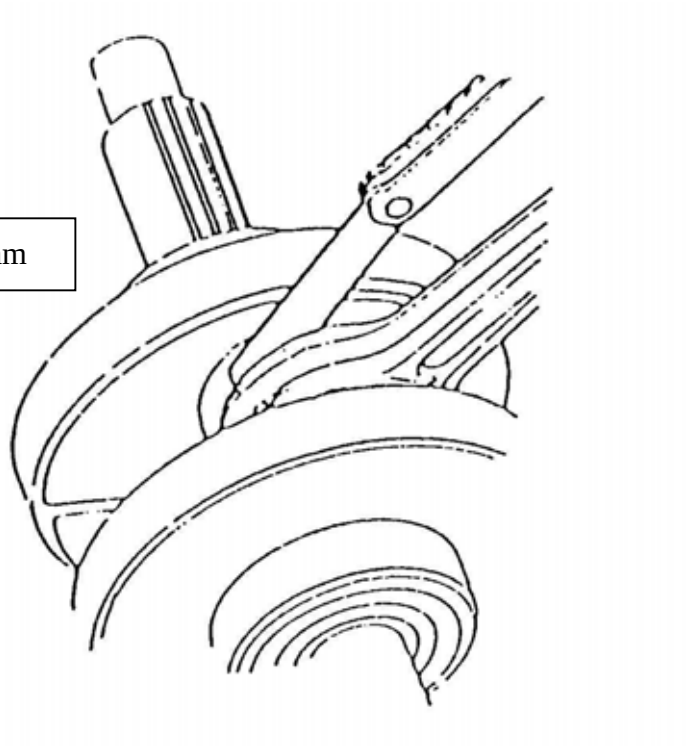
8.Dismantle the right and left crankcase.
There are all together 7 bolts.



9.Remove center stand, left and right crankcase and take out the crankshaft.

E. Check the crankshaft:

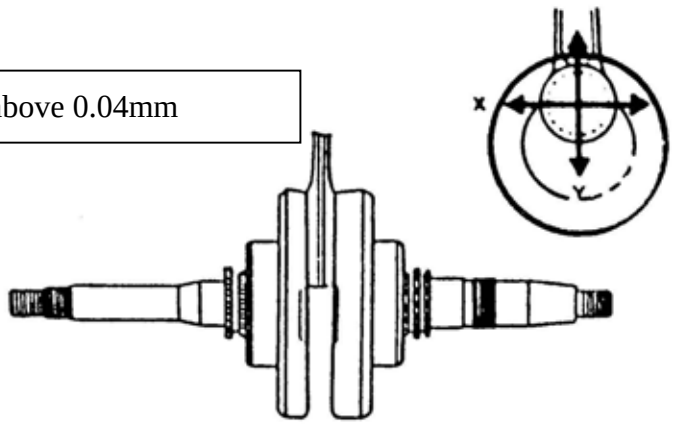
1.measure the clearance between crank shaft and co-rod big end.(Parallel direction to rod)



Limit of use: Replace a new when above 0.71mm

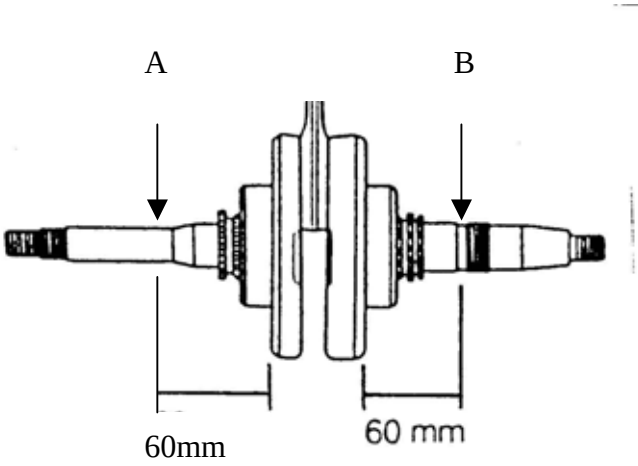
2.check the looseness on X.Y. axis of the connecting rod big end(Perpendicular directions to rod)

Limit of use: Replace a new one when above 0.04mm

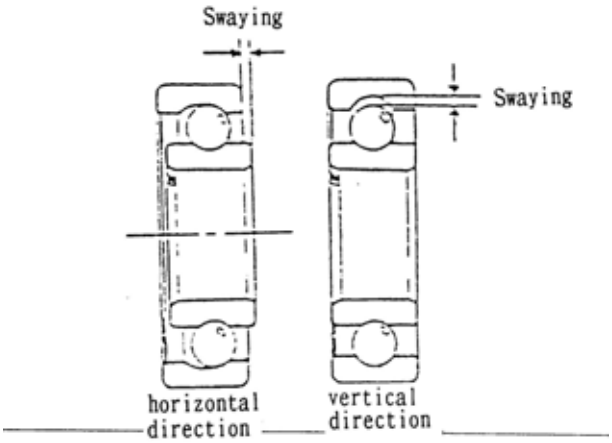


3.measure the swingness of crank shaft neck.

| Limit of use | |
|---|---|
| A | B |
| Change it when Above 0.1mm | Change it when Above 0.1mm |




4.check the slackness of crankshaft bearing,
if it is slack, change a new one.




F. Assemble the crankcase.

1.To assemble the crankcase, please reverse the procedures of disaseembling.

2.The locking torque value for bolts and nuts are all described in the previous chapters Please refer.

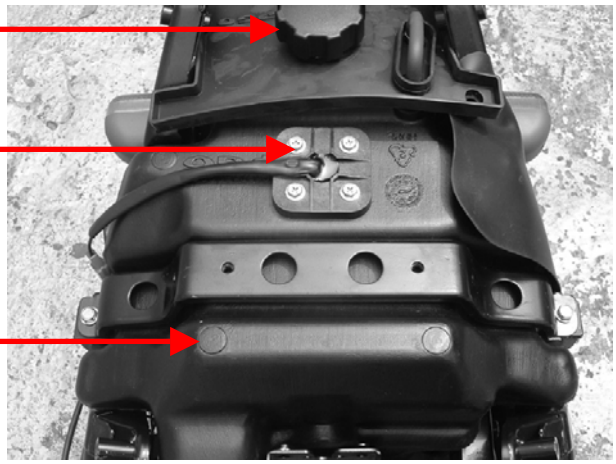
## (9)Carburetor, Reed Valve and Auto cock

A. Fuel system diagram

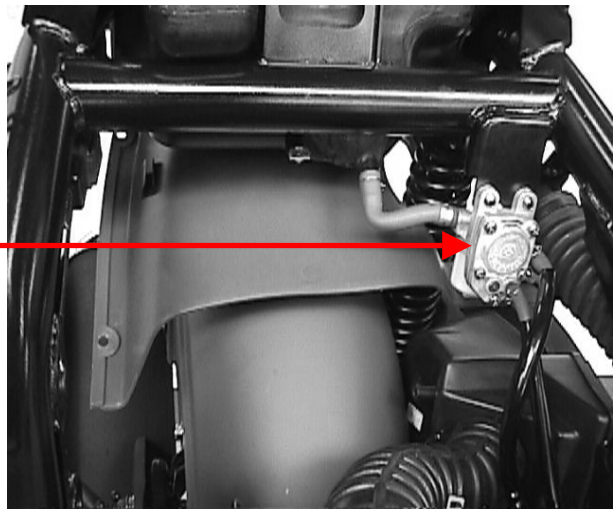
**Fuel Cap**

**Fuel Gauge**

**Fuel Tank**



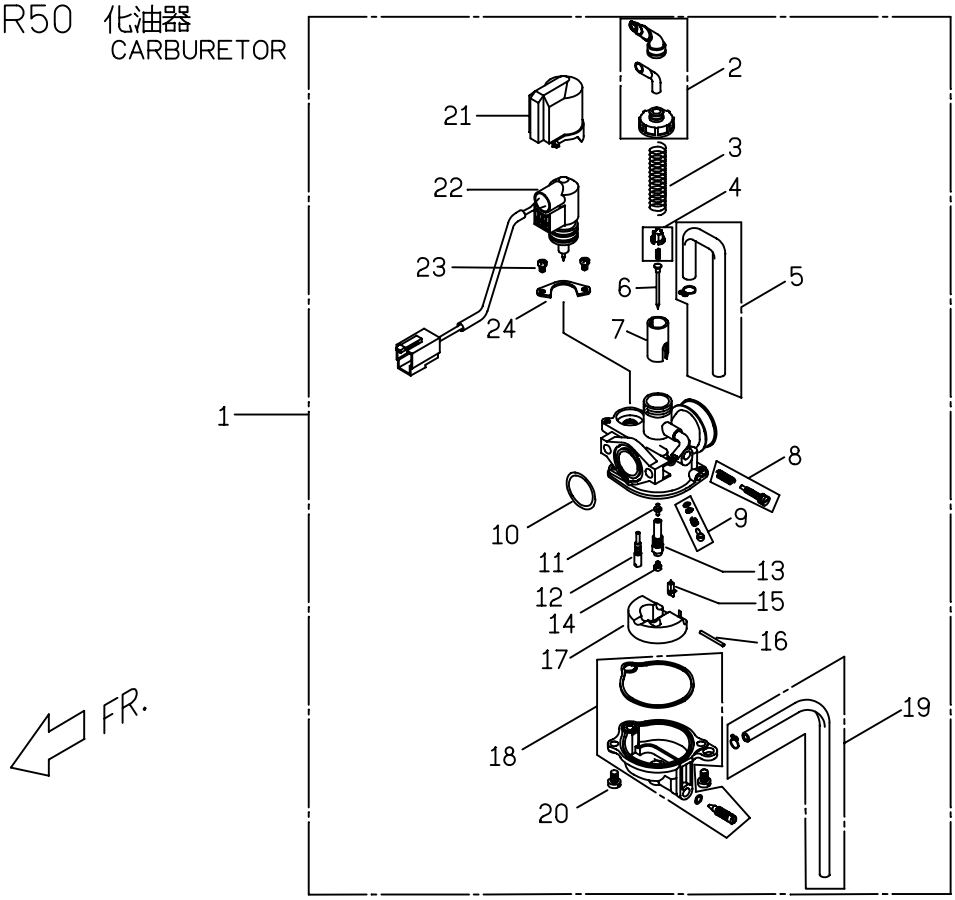
**Autocock**



Carburetor

B: Carburetor dismantling diagram

E9.1 XR50 化油器
CARBURETOR




| | |
|---|---|
| 01 CARBURETOR ASSY. | 13 HOLDER, NEEDLE JET |
| 02 TOP SET | 14 MAIN JET |
| 03 SPG., COMP. | 15 FLOAT VALVE SET |
| 04 PLATE SET | 16 PIN, ARM |
| 05 TUBE SET | 17 FLOAT SET |
| 06 JET NEEDLE | 18 FLOAT CHAMBER SET |
| 07 THROTTLE VALVE | 19 TUBE SET |
| 08 SCREW SET | 20 "SCREW, WASHER" |
| 09 SCREW SET (A.S) | 21 CAP HOLDER |
| 10 O RING | 22 AUTO BYSTARTER SET |
| 11 NEEDLE JET | 23 SCREW, WASHER |
| 12 SLOW JET | 24 PLATE SET |

C. Troubleshooting:

a. Engine can not be started.

1.No fuel in the fuel tank.

2.Fuel pipe is blocked.

3.There is too much fuel in the cylinder.

4.Air cleaner is blocked.

b. Engine idling(RPM)unsteady, running not smoothly

1.Improper adjustment of the carburetor idling.

2.Ignition disorder.

3.Compression pressure is too low.

4.Air mixture is too thick.

5.Air mixture is too lean.

6.Air cleaner is blocked.

7.Air injection is not in good function.

8.Fuel is dirty.

c. Air mixture is too lean.

1.Carburetor main jet is blocked

2.The ventilation hole of the fuel tank cover is blocked.

3.Fuel filter is blocked.

4.Fuel pipe bended, squeezed or blocked.

5.Float valve is abnormal.

6.Fuel level is too low.

7.Air pipe is blocked.

d. Air mixture is too thick

1.Float valve is abnormal.

2.Fuel level is too high.

3.Air jet is blocked.

D. Dismantling carburetor

1.Remove the luggage box.

2.Loose the hose clamp between the carburetor and the air cleaner.
Then remove the air cleaner.

3.Unscrew the fuel draining screw of the carburetor. Drain off the fuel inside the carburetor.

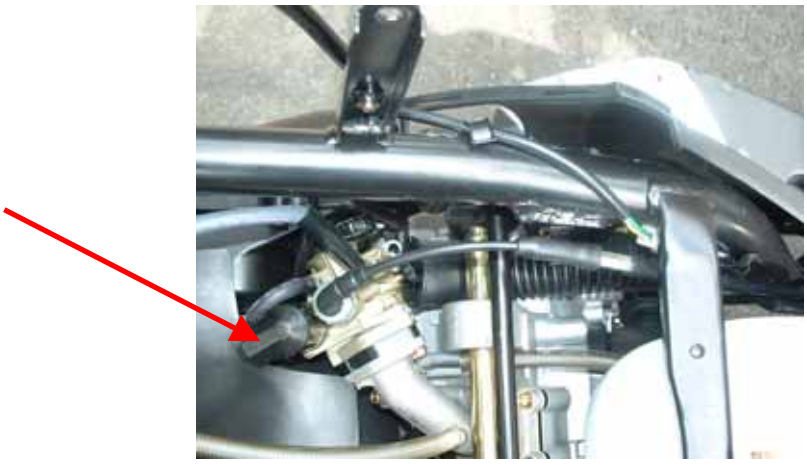
4.Remove the fuel pipe and the vacuum pipe on the carburetor.

5.Remove the oil pile on the carburetor.

6.Remove the bolts on the intake manifold and carburetor.

E. Dismantling float, nozzle

Note:
The auto choke has been properly adjusted already. Please do not adjust it further.
When there is blockage in the carburetor, please clean it by air compressor.



F. Reed valve

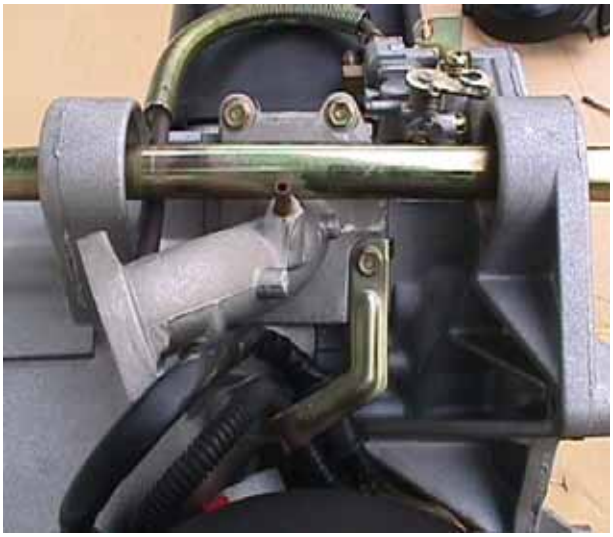
1.Dismantling reed valve.

(1)Take off the luggage box

(2)Remove the air cleaner

(3)Remove the carburetor.

(4)Unscrew the locking screw of the intake manifold.



(5)Remove the intake manifold.

(6)Remove the reed valve.

2.checking for the reed valve.

- chang a new one when the reed valve is worn out or distorted.
- change a new one too when the base of the reed valve is cracked, injured or distorted.

G. Check the auto cock

1.When the engine stop, remove the fuel pipe from carburetor and check if there is fuel flow Out or not.

It means auto lock functions well if the residue fuel(for the amount of 5-10cc)flows out From the auto cock and fuel pipe. However, if it continues to flow out, it means that the Vacuum pipe is blocked. please clean it.

2.Remove the vacuum pipe from the carburetor and suck it to produce a vacuum to have the Fuel flow out from the fuel pipe. The fuel will stop flowing out if the vacuun disappear.

If the fuel does not flow out by the above operation, please check the followings:

(a) Clean out blockage in the vacuum pipe.

(b)Blow air into the inlet pipe of the auto cock.

3.Note:

Please remember to use a bowl to catch the flow-out at the end of the fuel pipe.

Keep away from fire or even spark during operation.

(10)Handle bar, front wheel, front brake and front fork:

A. Troubleshooting

1.steering handlebar is abnormal, too tight.

a.steering mechanism; washer of conical bush locked too tightly.

b.steering mechanism; steel ball is cracked.

c.steering mechanism; steel ball base and washer of conical base is damaged.

d. wheel pressure is too low.

2.steering handlebar is aslant.

a.left and right damper are not even.

b.Front fork is crooked.

c.The axle of front fork is crooked or the wheel is aslant.

3.front wheel swings.

a.wheel rim is distorted.

b.bearing of front axle is loose.

c.wheel spoke is distorted.

d.Tire worn out.

e.The wheel axle is improperly assembled.

4.front damper is too soft, or spring fatigue.

5.Noise in front damper.

a.noise comes form the shock absorber tube.

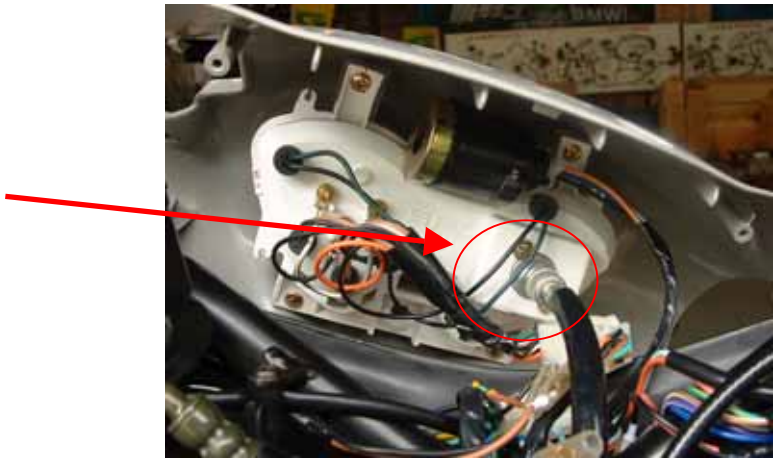
b.locking screw of damper is loose.

B. Data

| Item | Standard value(mm) | Limit of use.(mm) |
|---|---|---|
| Lining of frt pad | 5.3 | 3.3 |
| Disk of frt brake | 3.5 | 3.0 |
| Swingness of frt/rr wheel | - | 2 |
| The lining of rr Brake | 4.0 | 2.0 |

C. Change the speedometer cable:

1.Remove the front handle cover.



2.Remove the nut of the speedometer cable.

3.Remove the fixed screw of the speedometer cable on the front wheel.

4.Pull out the damaged speedometer cable.

5.To assemble the new cable, please follow the opposite of dismantling procedures.

| Note: Put some grease onto the inner cable before assembling. |
|---|

**(D)Steering handlebar**

1.Remove the LH/RH back mirrors.

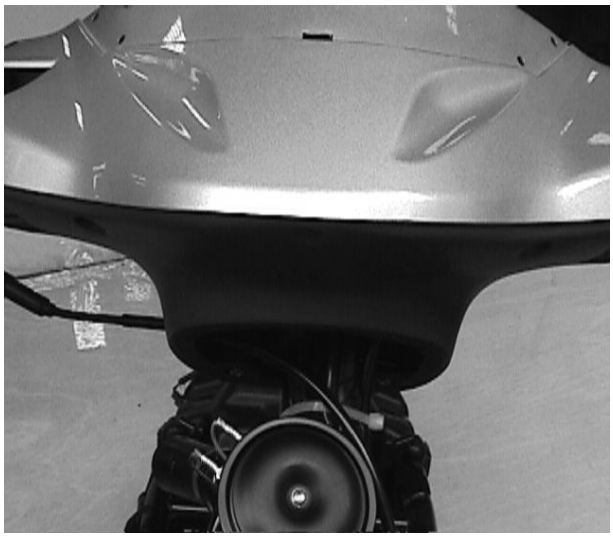
2.Remove the upper handle cover.

3.Remove the nuts on front fork and handlebar.

4.Take off the fixing bolt.

5.Remove the nut and bolt of the front fork fixed on
The handlebar.

6.Take off the handle bar.



7.When assembling, please follow the opposite procedures.

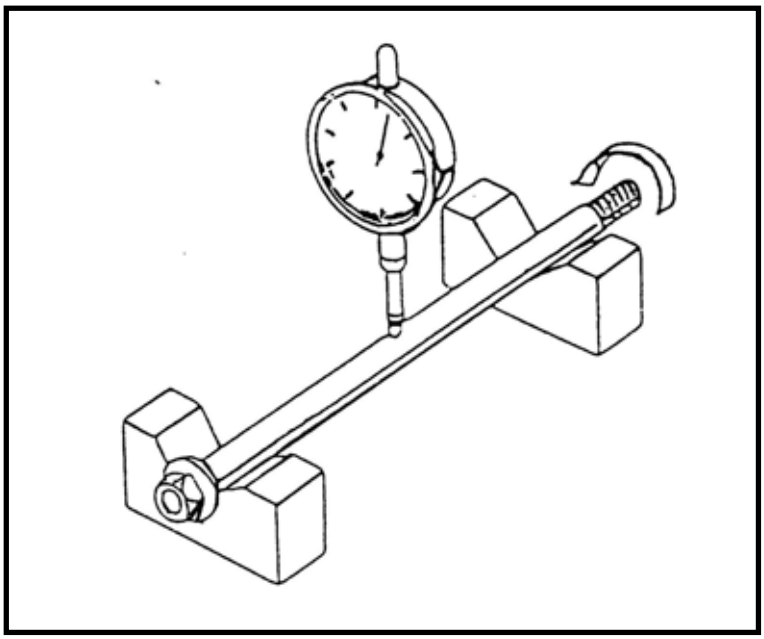
| Locking Torque: |
| --- |
| M6 : 1.0-1.2kg-m |
| M10 : 3.0-4.0kg-m |

8.Before assembling, please add grease on each cable.

## (E)Front wheel

1.Remove the locking nut of the front wheel on the right side.
2.Draw out the axle of front wheel, remove the ring and take off the gear sets of speedometer.
3.Remove the front wheel assy.
4.Assemble the front wheel follows the opposite procedure of dismantling.
Locking Torque:
M10: 3.0-4.0kg-m

Note:
1.Put the lock block of speedometer gear assy upon the extrusion of the front fork.
2.Put the grease onto the grease sets of speedometer before assembling.
5.Checking the front wheel axle
a. Check the bending degree of the front axle.
b. Take note of the bending degree on the middle of axle.
c. Limit of use: Change it when above 0.2mm.

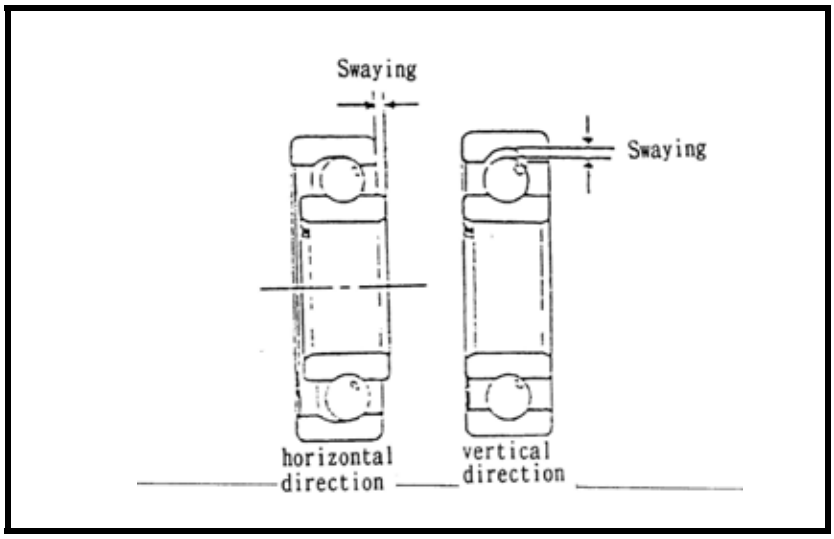


6.Front wheel bearing checking

Turn the tire. If the bearing is

Loosen or any occurrence for noise,

Please change a new one.




7.Front wheel rim checking

(1)Check the swing of the front wheel rim.

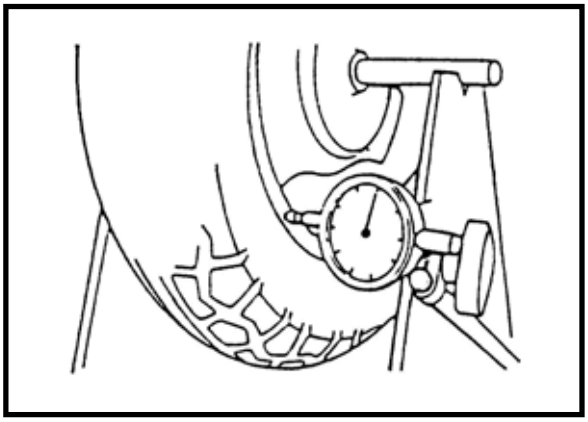
(2)Limit of use:

●Horizontal direction:

Change a new one when above 2.0mm.

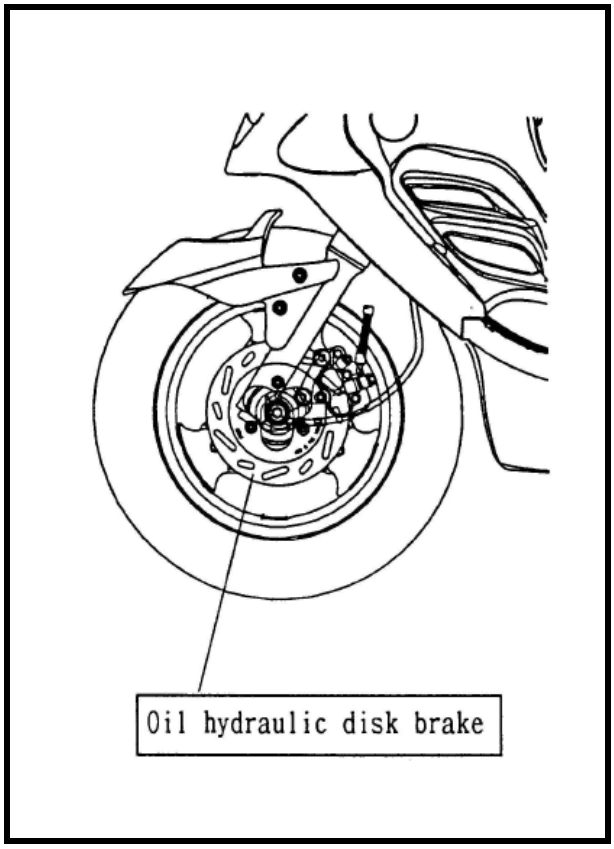
●Vertical direction:

Change a new one when above 2.0mm.



(F)Front brake

1. Disassembling and assembling of the front brake comp.
   a. Remove two bolts fixed on the front brake comp and the front fork.
   b. Remove the front brake comp.
   c. Assemble the front brake comp.
   Follows the opposite procedure of dismantling.
   Locking Torque:
   M8: 2.0~3.0kg-m




2.Air releasing of the front brake comp

The procedure of air releasing

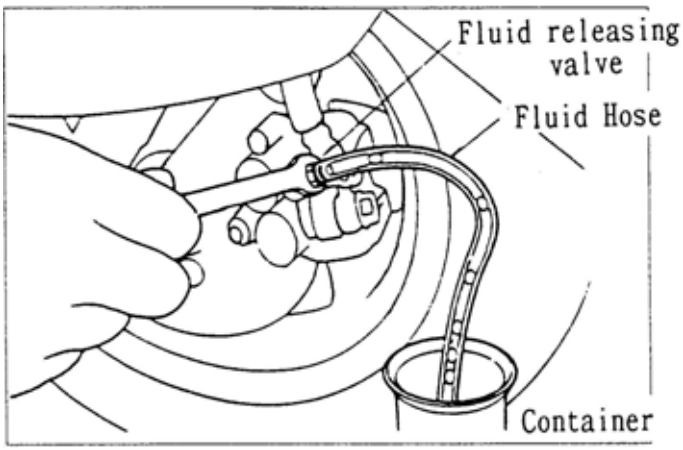
A .Fill the enough brake oil to the container

b. Do not let the brake oil overflow from the master cylinder or container when assemble the master cylinder cover.

c. Put the spanner upon the drain screw.

d. Lock and unlock the screw several times to Release the bubbles.

e. Operate slowly the brake lever several times.




f. Clamp the brake lever to the end.

g. Loose the drain screw, then open the lever completely.

h. Locking the drain screw and then loose it when the lever is opened completely.

i. Repeat above procedure until all the air in the brake system has been released Completely.

Locking torque of leaking screw: 0.6 kg-m

3.Front fork checking:

If it is bent or cracked, please replace with a new one.

4.Front shock absorber checking

Check is there any unusual damage or worn-out condition, and whether the guide rod of the Front fork is crooked or not.

Fork oil type: SAE 10W20

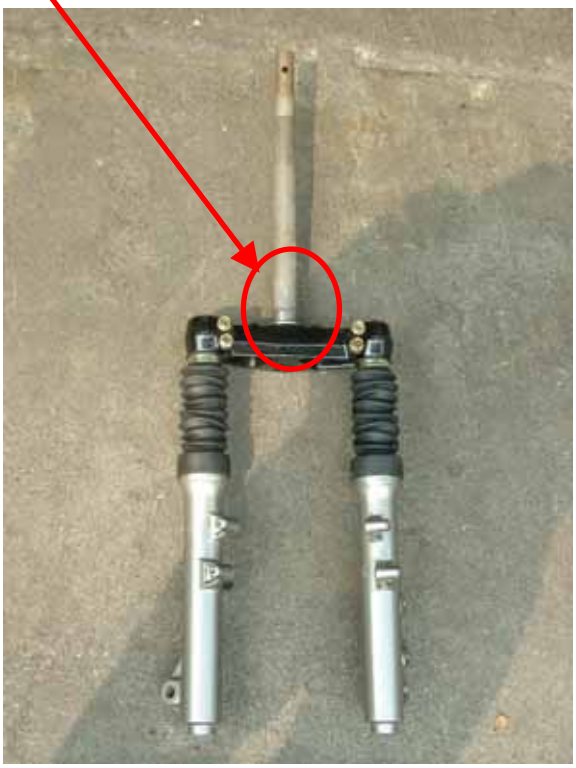
Capacity (each side): 84 CC

NOTE:

If the guide rod is crooked, it should be replaced by a new one or repaired.

Tube fixing screw

Spring fixing bolt



5.Disassembling and assembling the front brake-disk.

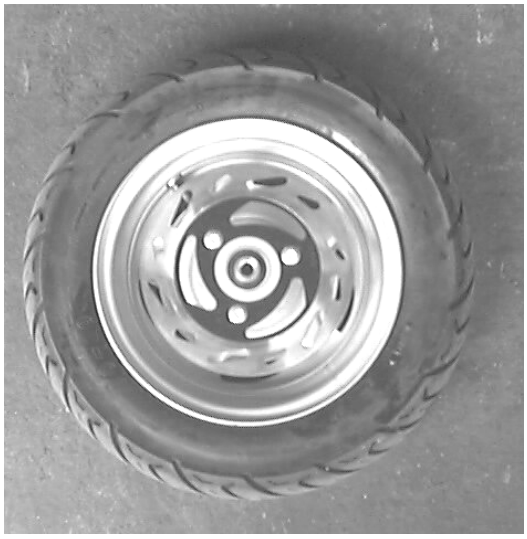
a. Remove the front wheel.

b. Remove three nuts on the disk.

c. Remove the disk.

d. Assemble the disk follows the disassembling procedure.

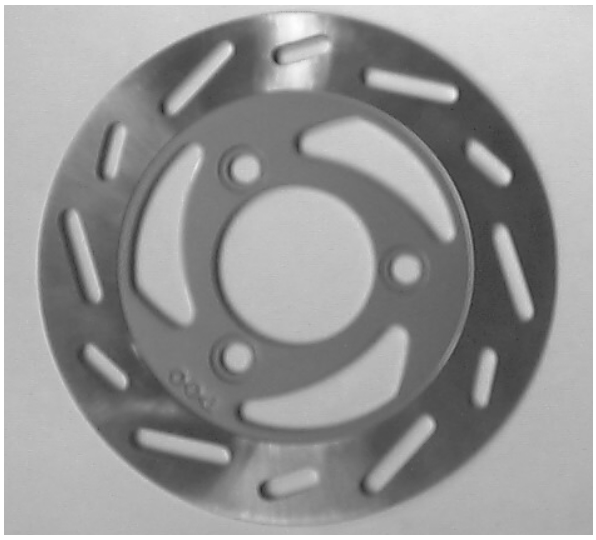
Locking torque M8: 2.0~3.0kgm



6.Checking the front brake-disk.

Standard thickness of disk: 3.6mm

Limit of usage: change it when below 3.1mm

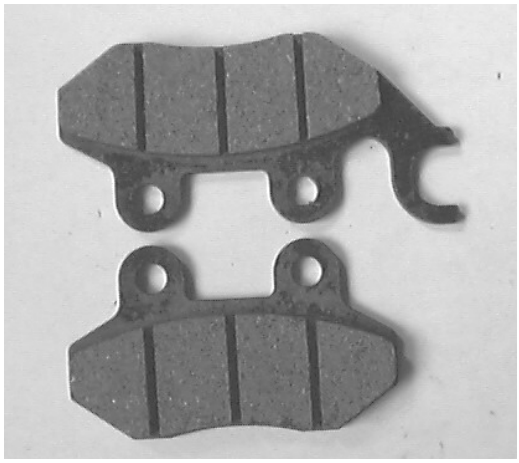


7.Checking the front brake-lining.

a. standard thickness: 4.0mm.

limit of use: As the thickness is below 2.0mm, change it.

| Note: No grease on the lining. |
|---|



## (11)Rear wheel, rear brake, rear damper:

A. Troubleshooting.

1.Rear wheel swings.

a. Wheel rim is distorted.

b. Tire worn out.

c. The wheel axle is improperly assembled.

2.rear damper is too soft.

a. Spring fatigue.

3.Bad braking

a. The adjustment of brake is not proper.

b. The brake lining is dirty.

c. The brake lining worn out.

d. The cam of brake lining is worn out.

e. The brake cam lever worn out.

f. The wheel hub worn out or damage.

g. The operation on the brake arm tooth is not good.

B. Data

| Item | Standard value(mm) | Limit of use(mm) |
|---|---|---|
| The swingness of rear wheel | - | 2.0 |
| Wheel hub (inner diameter) | 110 | 110.1 |
| Thickness of brake lining | 4.0 | 2.0 |

C. Disassembling and assembling the rear wheel.

1.Remove the rear mudguard and the exhaust pipe.

2.Remove the locking nut of the rear wheel

3.Remove the rear wheel

4.To assemble the rear wheel please reverse the dismantling procedure.

| |
|---|
| Locking torque:M6:0.7-1.1kg-m<br>M14:8.0-10.0kg-m |

D. Checking the rear wheel

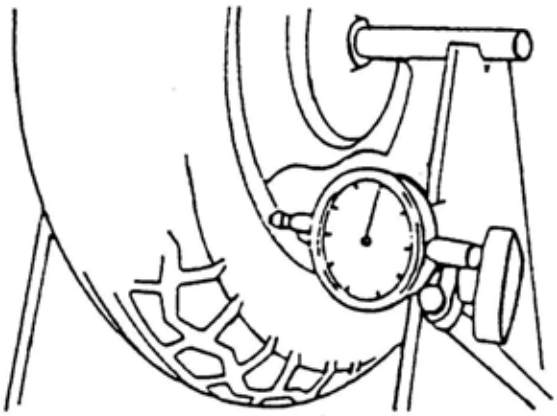
a. check the swingness of rear wheel.

b. vertical direction:

change it when above 2.0mm

c. horizontal direction:

change it when above 2.0mm



E. Rear brake:

1.Rear brake disassembling diagram.

(1)Checking the rear brake hub:

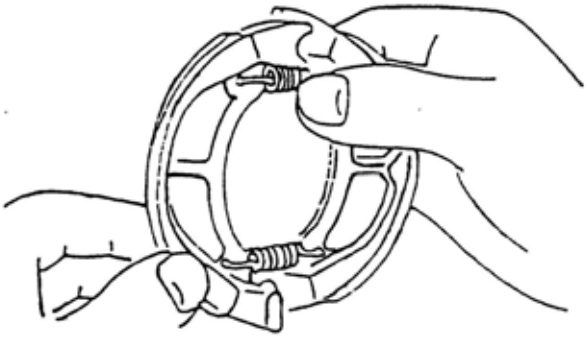
a.measure the inner diameter of rear brake hub.

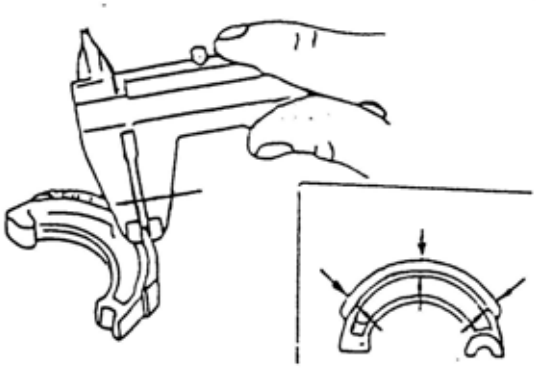
b.Limit of use: change it when above 110.0mm

(2)Checking the brake lining:

a.measure the thickness of the rear brake lining.

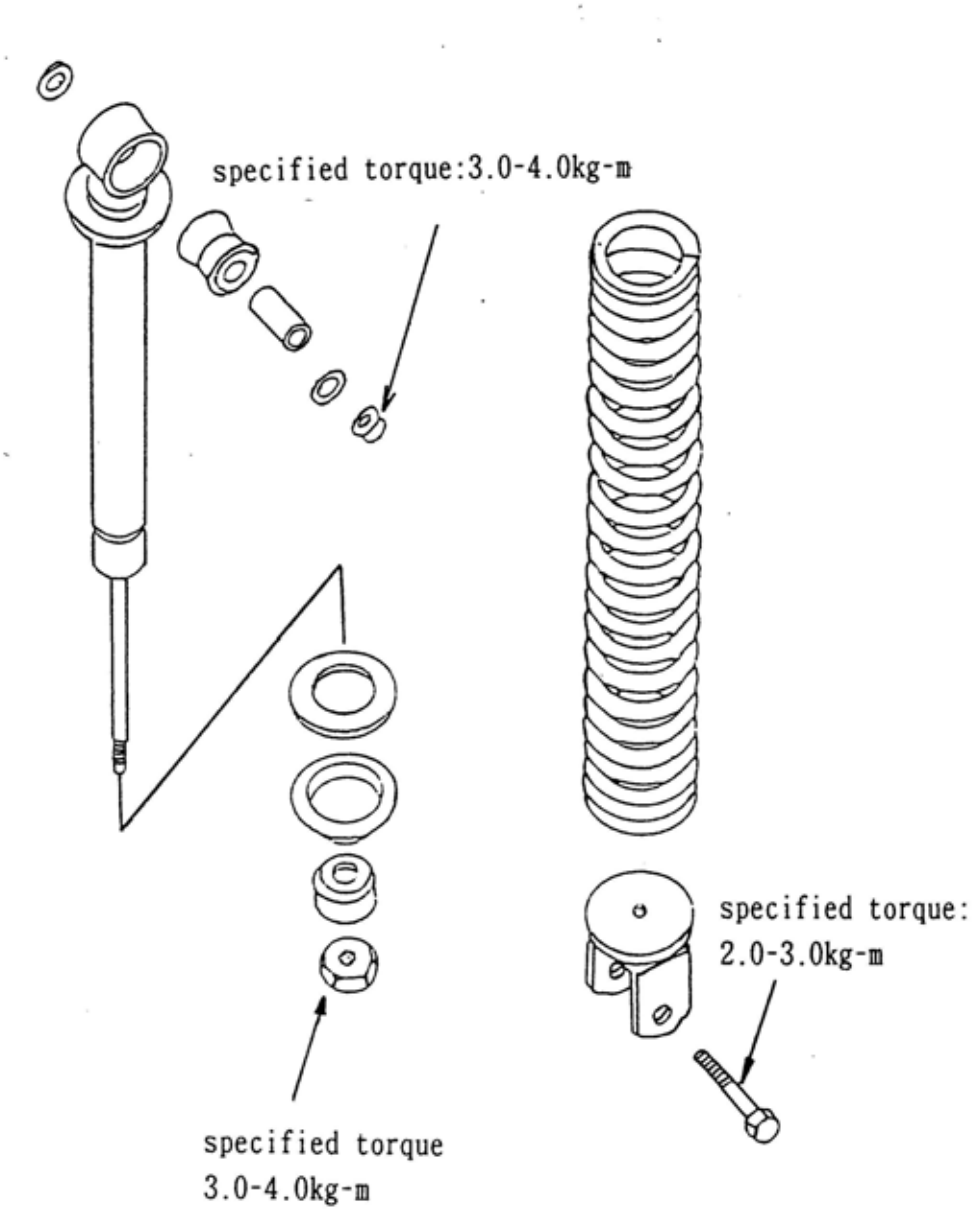
b.linit of use: As the thickness is less than 2mm, change it.





F. Rear damper

1.Rear damper disassembling diagram:



## (12)Fuel tank

A. Troubleshooting.

1.Engine can’t start:

a. No fuel in fuel tank.

b. Fuel pipe is blocked.

c. Auto cock and filter is blocked.

d. The membrane of auto cock is over swell.

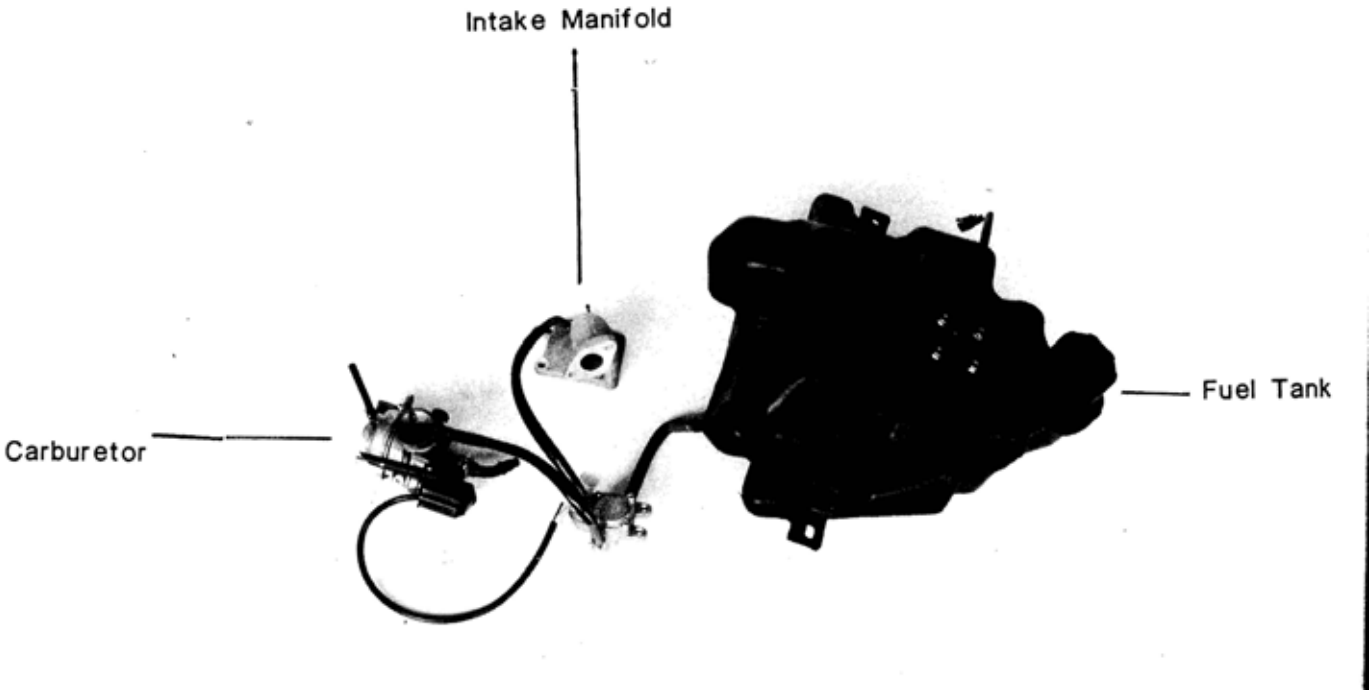
2.The membrance of auto cock is over-extended.

a. Fuel tank cover’s ventilation hole is blocked.

b. Fuel pipe is crooked, squeezed, or blocked.

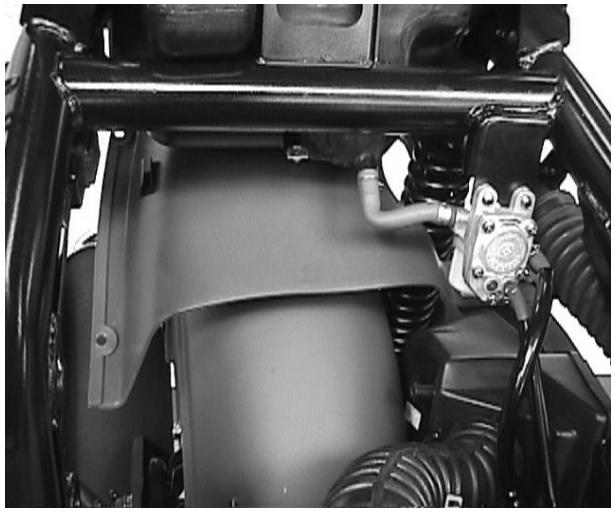
c. Auto cock and fuel filter is dirty.

B. Fuel tank disassembling diagram.

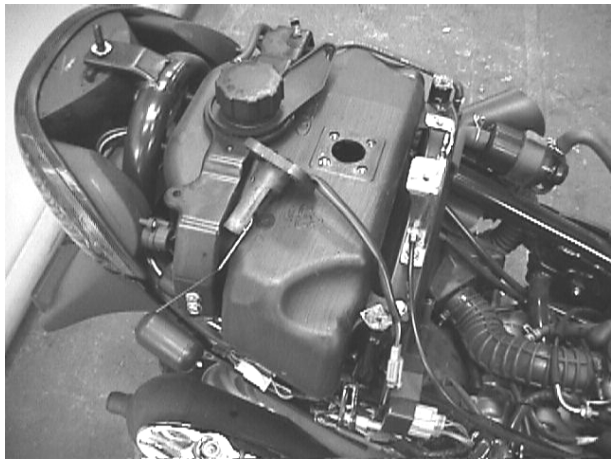


## B. Dismantling and assembling
## Fuel Tank

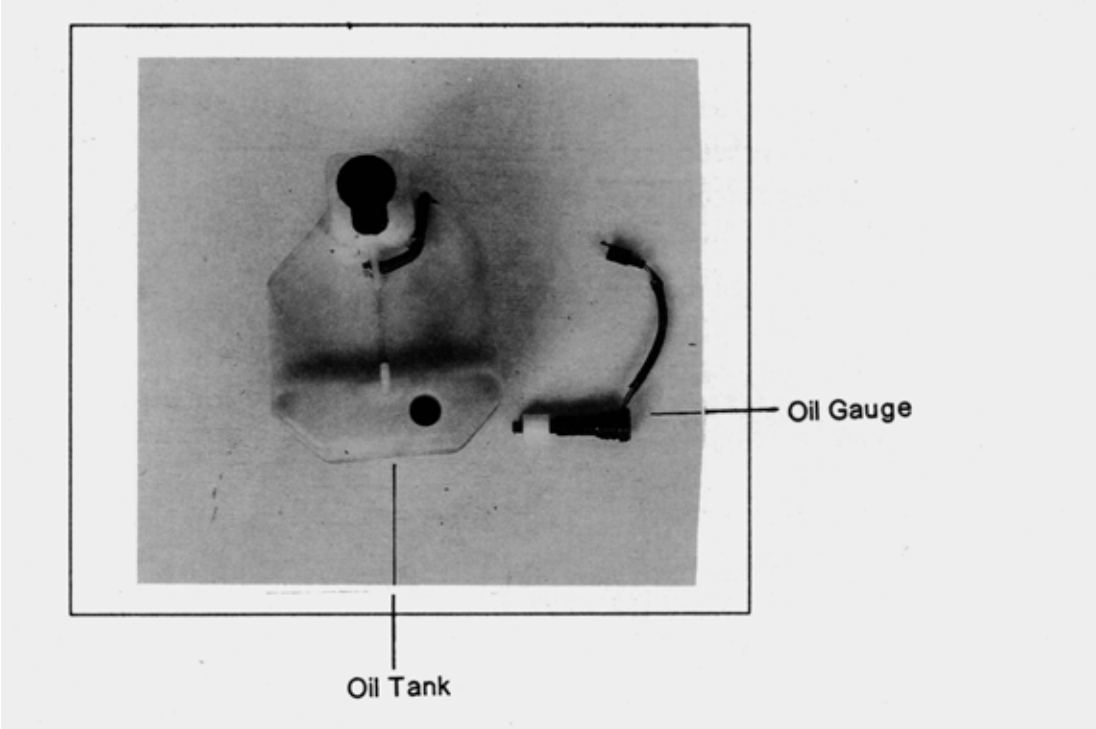
1.Remove the luggage box.
2.Open the rear cover of the fuel Tank and take it off.
3.Remove the left and right rear handle bars.
4.Remove the left and right side covers.
5.Remove the fuel pipe.
6.Remove the connecting terminal of the fuel gauge.



7.Remove the fuel gauge.
8.Remove the fixing blot of the fuel tank.
9.Take off the fuel tank.
10.When re-assembling, please follow the opposite procedure of disassembling.
Locking torque: M6: 1.0-1.2kgf-m



D. Oil tank disassembling diagram:




E.Dismantling and assembling oil tank:

1.Drain off the oil.

2.Disconnect plug of oil gauge.

3.Remove the oil tank.

4.Clean the oil tank.

5.To assemble the oil tank, please follow the opposite procedures of dismantling.

## V. Electric equipment:

(1)Troubleshooting

(2)Battery

1.Check the cells of battery

2. recharging

3.Test the recharging performance

(3)Recharge system

1. the wiring diagram of recharge system
2. check A.C. flywheel magneto.
3. Check regulator/rectifier.

(4)Ignition system

1. the wiring of ignition
2. check spark plug
3. check H.T. cable and H.V. coil
4. check C.D.I. set

(5)Starting system

1. the wiring of starting
2. checking the starter
3. dismantling the starting motor
4. checking the starting motor

(1)Troubleshooting:

A. Recharge system:

•No power:

1.Battery over discharging

①No electrolyte in battery.

②Battery is bleached

③Short circuit in the Battery.

④Regulator malfunction

2.The battery wires are disconnected.

3.Fuse is broken.

4.Ignition switch is abnormal.

•Voltage is too low:

1.Battery recharges insufficiently.

2.The bad connection on wiring system.

3.Recharge system is abnormal.

4.Regulator malfunction.

B. Ignition system:

•The sparking of spark plug is abnormal:

1.Spark plug is dead.

2.Wire connectsion is broken or short Circuit.

①between A.C. generator and CDI sets

②between CDI sets and High Voltage coil.

③between CDI sets and main switch.

④between main switch and spark plug.

3.Main switch is out of order.

4.H.V. coil is not in good function.

5.CDI sets is out of order.

6.A.C. generator is not in good function.

C. Starting system:

•Starting motor can't rotated:

1.The fuse is broken.

2.Battery recharges in sufficiently.

3.Main switch is out of order.

4.Starting motor switch is out of order.

5.Front/rear brake switch is out of order.

6.Starter relay is out of order.

7.Wire disconnects or broken.

8.Starting motor is out of order.

•Currency is unstable.

1.The wiring of batter connection is not good.

2.Ignition system connection is not good.

3.Ignition system is short circuit.

4.Lamp system connection is not good or short circuit.

•Abnormal recharge system:

1.The plug connection is not good. wire broken or short circuit.

2.Rectifier is out of order.

3.A.C. flywheel magneto is abnormal.

D. Engine running unsmoothly:

1.Ignition primary circuit.

①the wire or plug of wiring connection is not good.

②main switch disconnects.

2.Ignition secondary circuit.

①Ignition coil is not in good function

②Spark plug is dead.

③H.V. coil is not in good function.

④The spark plug cap is not in good function.

3.Ignition timing

①A.C. generator is out of order.

②A.C. coil is not in good function.

③C.D.I. sets is out of order.

•Starting motor runs weakly.

1.Battery recharges insufficiently.

2.Wiring system disconnects.

3. The alien objects drop in the motor or gear.

•Starting motor can rotate, but engine can't start up.

1.Starting gear is abnormal.

2. Starting motor is reversedly rotating.

3.Battery is out of order.

## (2)Battery:

1.Check the cells of battery.

Always remove the battery negative Cable(-)first, then positive cable (+). But connect the positive cable (+)first, then connect the Negative cable(-) when assembling.

**Negative Pole** **Positive Pole**

2.Recharge

•Connection procedure:

connect the positive cable(+) of the negative cable(+) of the battery, and the negative cable(-) of the recharge to the negative cable(-) of the battery.

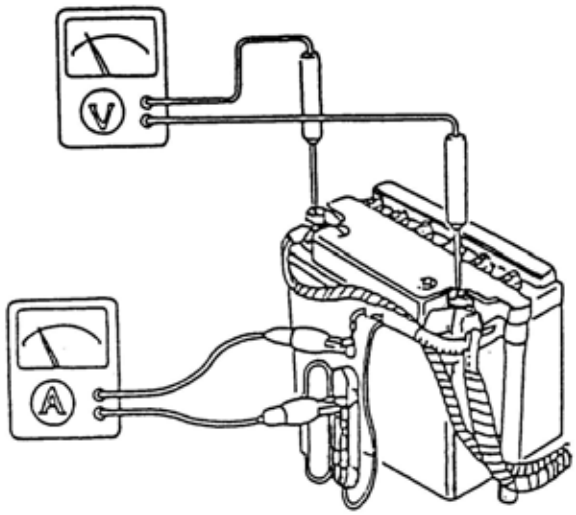
•Recharging currency:

Please recharge (12V) according to the following current and time.

Standard: 0.4A * 4-10Hr or Rapid:4A * 30min(50cc)

NOTICE:
This battery is totally sealed. Do not remove seal bolt when recharging.

Notice:
•Keep away from fire when recharging.
•The “ON” or “OFF” of recharging. currency must be operated by the switch of recharge. It will cause spark or explosive if plug or unplug the cable directly.



3.Testing the recharging performance

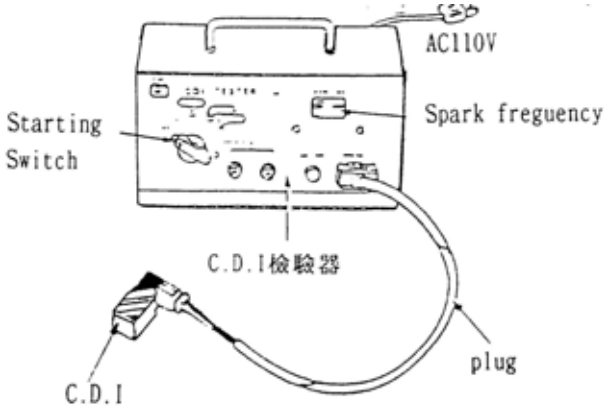
| |
|---|
| •This test needs to be done when the battery is fully recharged.<br>•This test needs to be done after engine is warm-up. |

a. Disconnect the orange cable of regulator.

b. Open the fuse box, to remove the white cable.

c. Connect currency meter between red/white cable and fuse.

| |
|---|
| While testing, the red wire cable must not touch the frame. |



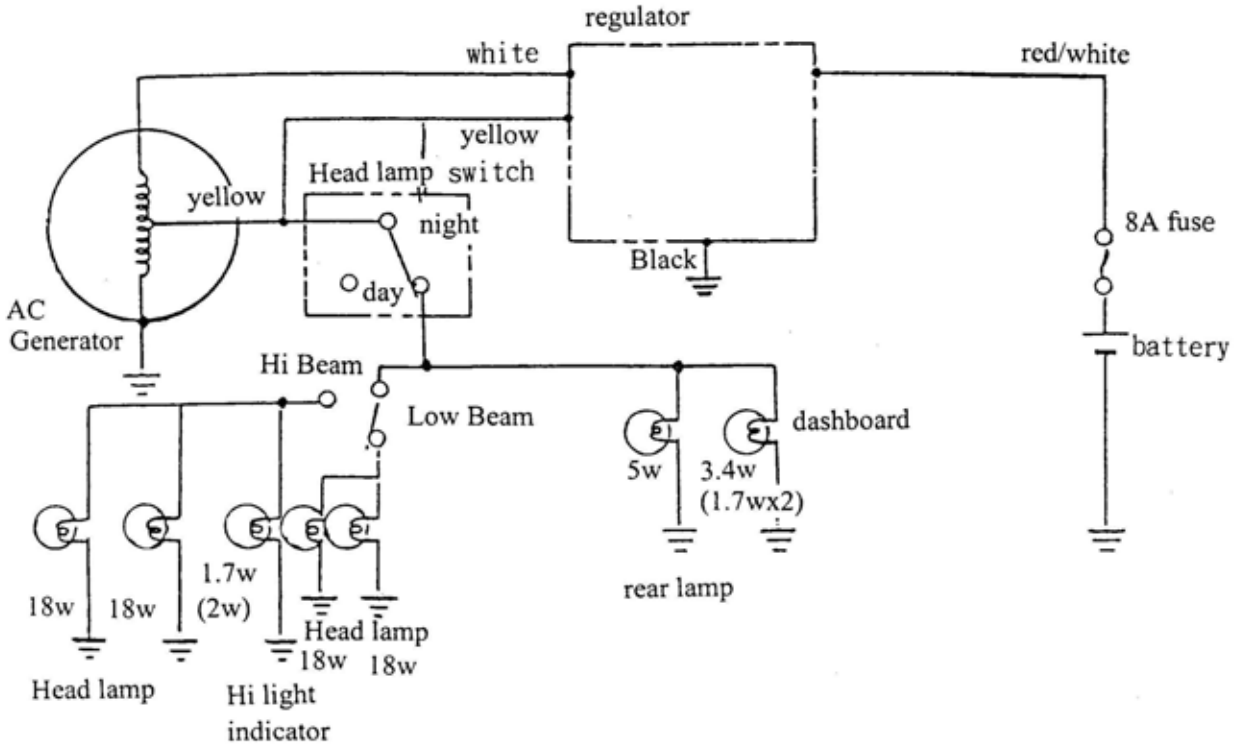

d. Set the head lamp switch at “OFF”, engine revolution is at 2000 rpm while testing.
Then increase the rpm slowly.

| Head Lamp Switch | Recharging rpm | 2,500rpm | 6,000prm |
|---|---|---|---|
| OFF(DAY) | Under2,000rpm | 0.6A(MIN) | 1.5A(MIN) |
| ON(NIGHT) | Under2,000rpm | 0.6A(MIN) | 1.5A(MIN) |

e. If the testing result does not match the standard value, check the regulator.

(3)Recharge system:

1.Recharge system diagram



2.Check A.C. Generator

a. Open the seat cover and remove the luggage box.

b. Measure the resistance value of terminals.

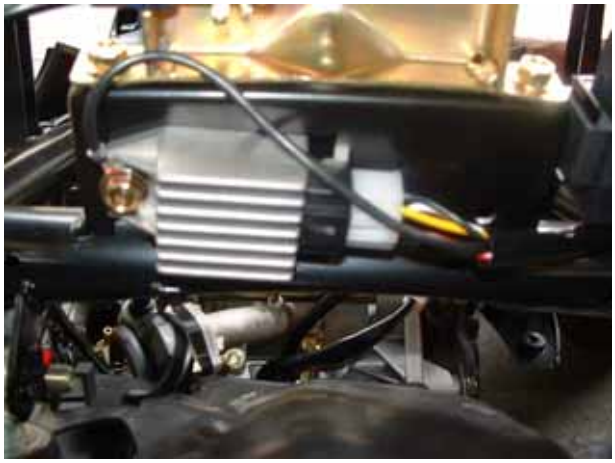
| |
|---|
| Yellow V.S. black 0.1-1.0<br>White V.S. black 0.2-2.0 |

ACG inside

3.Check regulator

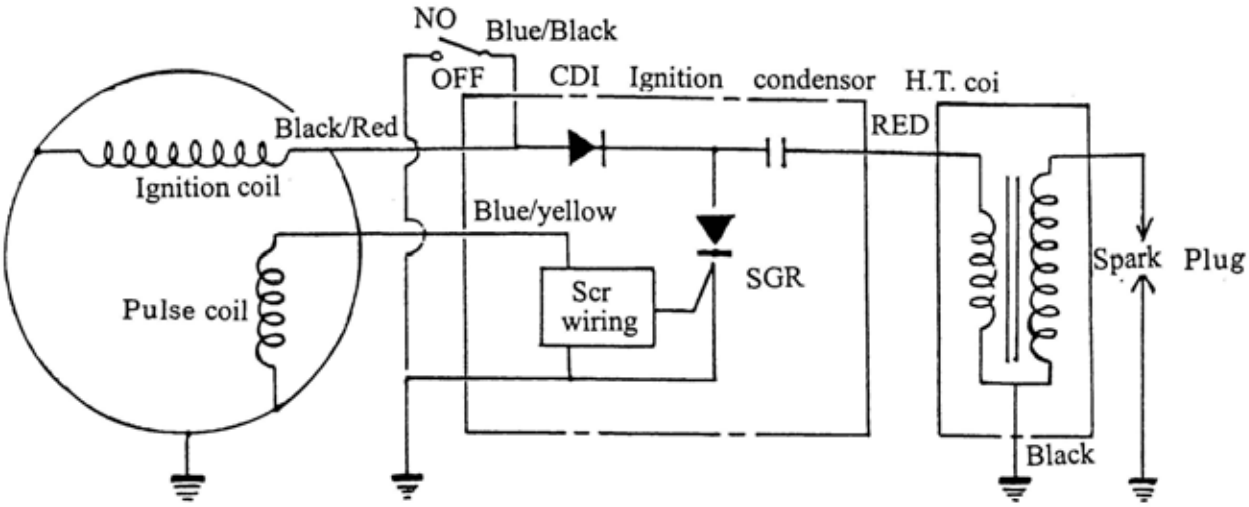
Measure the resistance value between each terminal,

It should be in the specified range, otherwise change a new one.



(4)Ignition system:

1.the wiring or ignition




2.check spark plug.

3.Check the H.V. cable and H.V. coil by using the CDI tester.

Please follow the instruction manual.

4.CDI sets checking.

Check with the CDI tester and please follow the instruction manual.

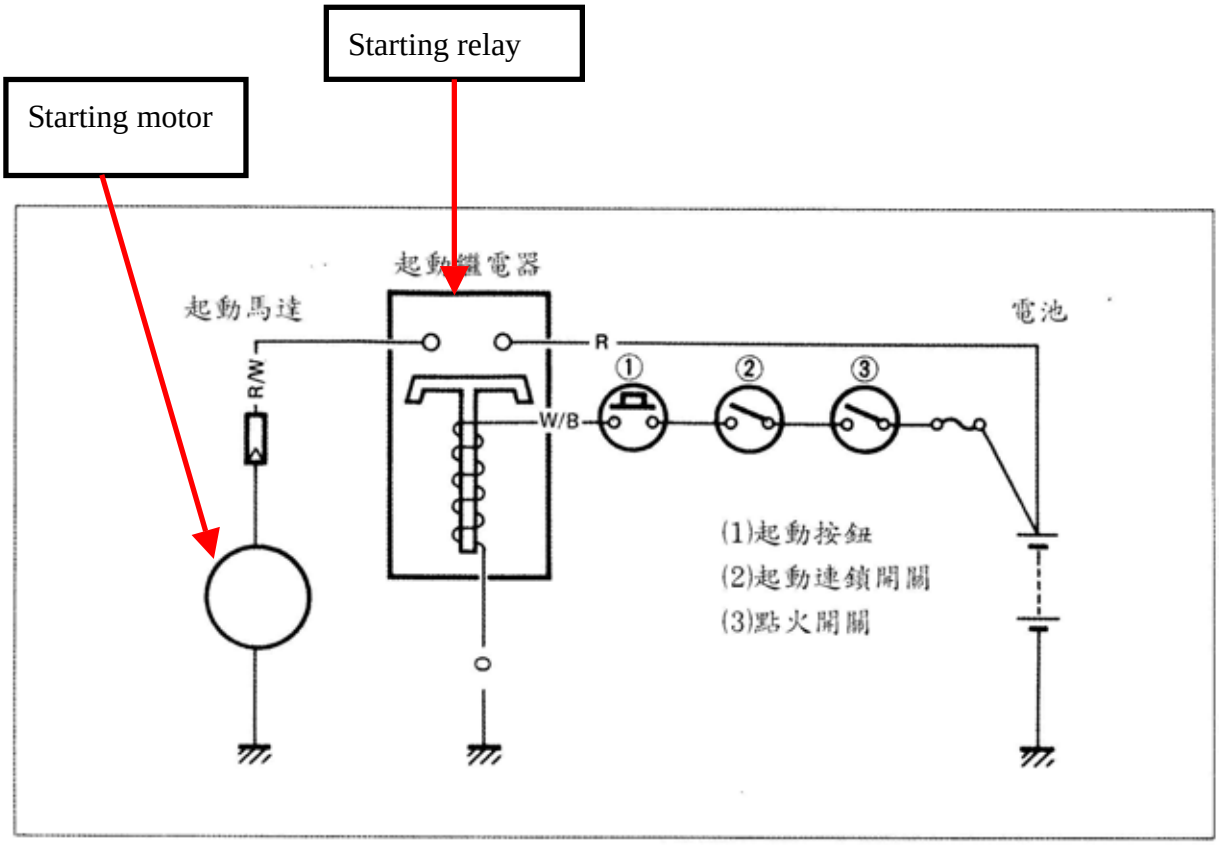
If the CDI test failed, please change a new one.

Ignition coil

CDI

(5)The starting system:

1.The wiring of starting



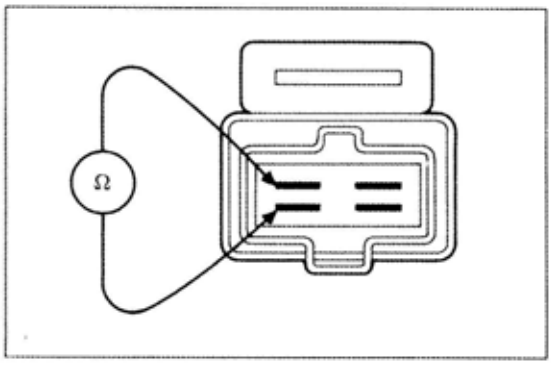

①starting button

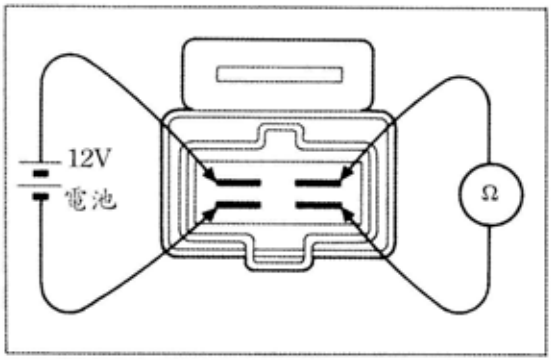
②safety switch

③main switch

2.check the starter

•Connect green/white cable to positive pole of battery, connect black cable of negative pole of battery, It means starter is function well if above connection and both Red Black cable of staring motor have currency passing through.




3.Dismantling the starting motor

(a)Remove 2 screws on starting motor.

(b)Remove starting motor cables.

4.Checking the starting motor

•Check the function by connecting the starting motor to battery.
(Check if it is rotating counter clockwise)

| Note: Do not operate starting motor for a long time. |
|---|

# INSTALL INSTRUCTION OF DIFFERENTIAL MECHANISM

1. Put part 1 into the left hand's side of the differential gear box. Be sure that the splint of the shaft be inserted into the splint hole.
2. The same procedure 1， Put part 2 into right hand side of differential gear box.
3. Put part 3 into the position of gear box (as attached draw )，use part 4 through part 1, 2, 3 combine with engine. And fasten the nut of part 5. ( torque 2.0~2.5 kg-m).
4. Put part 6 with the fixed points of part 1 & part 2,fasten them with part 7-bolt.
5. Put rear brake wire (x2) through the stopper of part 1 & part 2. To the end of rear brake arm put into the spring & stop pin， fasten with nuts.
6. Put tires into the end of transmission shaft (part 1、2)， fasten the tires with nuts (part 10,11) with torque 11~13kg-m， be sure the rotating direction of tires; adjust the brake wire.
7. Faster rear Fenders (part 12) with part 1 & 17 with bolts & washers of part 13、14，Put part 18 wire into and out of part 17 with the fixed points, fasten the with part 19 and part 20-bolt. (Outlet is down for part 18, torque 0.9~1.1kg-m)
8. Faster rear Fenders (part 12) with part 21& 2 with bolts & washers of part 13, 14, Put part 22.wire into and out of part 21 with the fixed points, fasten them with part 19 and part 20-bolt. (Outlet is down for part 22, torque 0.9~1.1kg-m).
9. Connect the wire of part 18 & 21 with wire harness.
10. Connect the wire of buzzer with wire harness， fasten buzzer on part 3 with part16 bolt.

**NOTE: PART17~PART22 IS FOR TURN SIGNAL MODEL.**